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Few concepts in the history of philosophy or science are as rich, polysemic and mysterious as imagination. That "art concealed in the depths of the human soul" as Kant said, is indeed a fundamental concept in philosophy, namely in philosophy of knowledge, logic, metaphysics, philosophy of science, modal epistemology, aesthetics, philosophy of art, ethics, social and political philosophy, philosophy of mind and so on.

As it happens with all philosophical concepts, the concept of imagination has an history and a controversial heritage. Present in all great philosophical traditions, both continental and analytical, the concept of imagination has been specially worked out by such figures as Plato, Aristotle, Francis Bacon, Thomas Hobbes, Pascal, Spinoza, David Hume, Kant, Fichte, Schelling, Peirce, William James, Husserl, Bachelard, Gilbert Ryle, Wittgenstein, Sartre or Ricoeur. Even Descartes, who is very suspicious of the imagination, cannot avoid the evil demon, an imaginary creation, which is presented as the strongest metaphysical argument in his rationalist theory.

Imagination is also a transversal concept that cuts across various fields and disciplines besides philosophy, namely psychology, arts, literary theory, religion, law, rhetoric, heuristics, cognitive sciences, and, more recently, some aspects of scientific computing and artificial intelligence. In addition, in natural sciences studies, imagination is often presented as the driving force behind the discoveries and counterfactual reasoning of scientists such as Kepler, Galileo, Darwin or Einstein, to name but a few.

Among the vast literature on philosophy of imagination, one of the most challenging problems is concerned with the mere passive, reproductive, substitutive nature of the imaginative mental activity; the other is its anticipatory, productive, creative capacity. Is imagination intimately linked to receptive experience, perception, memory, and mental representation, or is it actively capable to open to alternative realities, to convey, to develop, to project something new. Does imagination simply re-produce image-copies, as Gadamer would say, or does it freely produce (presents) novelties projected in the past or in the future?

If so, is imagination a deceptive capacity, producer of illusion and error that must be corrected, or does it perform a positive cognitive role? Could it be, as Kant pointed out, that imagination might constitute "the source, the matrix of understanding"?

But - and this is a decisive point - how to determine that constitutive power of imagination? Does it lie in its mediating role between sensibility and intellect, in its synthesizing capacity of intuition and concepts, in its capacity to produce the rules (schemata) by which intuitions may be subsumed into concepts (Kant's first Critique), or, more than that, is imagination a free, "wild power" capable to extend, surpass, exceed the limits of empirical understanding? (Kant's third Critique). Among the many other important theses that have been advanced to clarify that constitutive power of imagination, some stressed the prescriptive propositional nature of imagination, its illustrative, iconic ability to display the existing concepts, to exhibit their relational range and, thus, to open to the conditional, to the possible, to the "as if" (Husserl), to the nothingness (Sartre), that is, not only to what is not present (the impossible, the absent, the existing elsewhere, the suspended existence), but to the non-existent, the inexistent, to fiction (Ricoeur).

Surprisingly, since the mid the 20th century, different traditions and disciplines come together in the development of an intense research on productive imagination. More, much more than an escape from reality, imagination is though out as an instance of ontological and epistemological scope. A fruitful capacity that sets aside the classical propositional way of reference to describe the world allowing a better comprehension of reality (Bachelard), to scrutinize the technological capacity of producing novelty (Simondon), to uncover the abductive logic of scientific discovery (Peirce), to inspect the secretive phenomenon of insight (Wertheimer, Weisberg), to understand the artistic production of new entities (Collingwood), the fictional literary capacity of remaking reality (Castañeda), the political search for alternative worlds, the social quest for new forms of life. In other words, imagination is manly thought out as a creative force underlying all kinds of human activity, be it scientific, technological, artistic, social, or political. In sum, we could say that today, in the world of complexity, imagination is receiving growing attention in diverse areas, as in aesthetics and philosophy of art (imagination is claimed vital for the artistic work of painters, writers, musicians, performers), in philosophy of mind (where the relationship of imagination to belief and desire has been especially considered), and in philosophy of science (imagination is nowadays central to discussions on thought experiments and modal epistemology).−

Maybe, the centrality of the concept of imagination is a symptom of the apologetic regime of the new which we live under today. A regime which wants to ensure, at all costs, that the new is possible, whether in science, in technology, in arts, in

politics, in or everyday life. And maybe, the attention that imagination attracts today from so many philosophers, scientists, politicians, and artists is due to the fact that it is a wild, savage force that carries with it the promise of new possibilities.

These are some of the reasons why we believe in the importance of continuous research on the concept of imagination. And, in this sense, we can no longer accept excuses and magic words to try to explain imagination.

The editors

The Intention in Invention: A Philosophy of Technical Imagination

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Abstract:
To reflect on imagination today is not to revisit an exhausted theme, but to re-engage a philosophical question that continues to unsettle inherited epistemologies and ontologies. Our article focuses on one specific regime of imagination: the relation between imagination and technology, approached through the lens of invention. As we explore the particular regime of *technical imagination*, we aim to overcome the idea that invention should be treated as a purely productive process, a functional response to material needs or economic constraints. We rather argue that invention, as a technical activity, mobilizes a specific form of imagination; one that requires a rethinking of *technicity* itself. We therefore examine how technical imagination engages with the virtuality and potentiality of matter, as it schematizes possibilities and projects relations before they are actualized. In doing so, our main hypothesis is the need to explore the temporal structure of imagination through the concept of *technical intention*. We argue that *in the process of invention, the very operativity of technical imagination depends on intention*. As such, technical intention is the structure that makes technical imagination an active and operative process, during the process of invention, and from what emerges the actualization of a concrete technical individual. Within this gesture, the investigation of imagination calls for a form of responsibility adequate to the transformations it sets into motion, grounded in an awareness that invention is never neutral, but always intervenes in the becoming of reality and consequently in the shaping of our societies. It is in this sense that invention must be understood as inherently grounded in technical imagination, and that both of them reclaims their aesthetic, ethical and political stakes.

Keywords*: Bergson, Simondon, Imagination, Invention, Technology*

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Résumé:
Réfléchir à l'imagination aujourd'hui ne revient pas à épuiser un thème ancien, mais à réengager une question philosophique qui continue d'ébranler les épistémologies et ontologies dont nous avons hérité. Cet article se concentre sur un régime spécifique de l'imagination : son rapport à la technique, envisagé à travers le prisme de l'invention. En explorant ce que nous appelons le régime de *l'imagination technique*, nous cherchons à dépasser l'idée selon laquelle l'invention ne serait qu'un processus productif, une réponse fonctionnelle à des besoins matériels ou des contraintes économiques. Une telle conception réduit l'imagination technique au cadre du solutionnisme technologique ou de l'innovation considérée comme marchandise. À l'inverse, nous soutenons que l'invention, en tant qu'activité technique, mobilise une forme spécifique d'imagination, qui exige de repenser la technicité elle-même. Nous examinons ainsi comment l'imagination technique engage la virtualité et la potentialité de la matière, en schématisant des possibilités et en projetant des relations avant même leur actualisation. Ce faisant, notre hypothèse centrale est qu'il faut explorer la structure temporelle de l'imagination à travers le concept *d'intention technique*. Nous défendons l'idée que, *dans le processus d'invention, l'opérativité même de l'imagination technique repose sur l'intention*. En ce sens, l'intention technique désigne la structure qui rend l'imagination technique active et opératoire au cours du processus d'invention, et d'où émerge l'actualisation d'un individu technique concret. À travers ce geste, l'analyse de l'imagination appelle à une forme de responsabilité à la hauteur des transformations qu'elle met en œuvre, dans la conscience que l'invention n'est jamais neutre, mais intervient toujours dans le devenir du réel et, par là même, dans la configuration de nos sociétés. C'est en ce sens que l'invention doit être comprise comme intrinsèquement fondée sur l'imagination technique, et que toutes deux engagent des enjeux esthétiques, éthiques et politiques.

***Keywords**: Bergson, Simondon, Imagination, Invention, Technologie*

Introduction

To reflect on imagination today is not to revisit an exhausted theme, but to re-engage a philosophical question that continues to unsettle inherited epistemologies and ontologies (Prigogine & Stengers, 2016; Renauld, 2017; Jørgensen, 2017). Evidently, imagination is not merely enclosed in the space of fiction and its etymological *fantasia*, but is also a stake for social sciences (Zittoun & Glăveanu, 2017), as it opens a domain of anticipation, projection and consequently transformation, wherein possibility inflects reality. What we call imagination does not manifest uniformly across all domains. It may operate as aesthetic contemplation and oneiric

drift, speculative logic, or literary creation (Glăveanu and al., 2017) — but also as technical invention. It is thus possible to speak of multiple configurations, regimes or "culture" of imagination at stake. As such, how a society organizes, privileges, legitimates or constrains these different cultures of imagination plays a key role in how it anticipates its futures, considers its development or progress, and determines what may count as possible or desirable.

Our article focuses on one specific regime: the relation between imagination and technology, approached through the lens of invention, or what the philosopher Emilien Dereclenne (2025) calls "enaction". We thus explore a particular regime of imagination — technical imagination (Simondon, 2017 [1958], p. 74) — as it operates within processes of fabrication and anticipation. In doing so, we aim to discuss how imagination is a mode of relation to technology that reorganizes its contours and conditions of emergence, a hypothesis that carries profound implications for how we conceive of our current relationship to the world.

Indeed, invention is often treated as a purely technical or productive process that results from a functional response to material needs or economic constraints, as Thierry Ménissier (2016, p. 47) underlines: innovation is mostly "shaped by technological invention, correlated with the adoption by consumers of the objects and services produced through the continuous emergence of new tools, processes, and methods". Limiting invention to what we could call *fabrication* alone — understood as the production of technical individuals, such as objects, ensembles or systems — risks reducing imagination to an instrument of efficiency or utility. Such a reduction not only obscures its epistemic depth but also carries political weight: it aligns invention with a technocratic rationality, thereby obscuring the dimension of imagination that lies in it. Plus, as it focuses on invention as the result of social contingencies, it forecloses its capacity to reconfigure our societies by opening future alternatives and challenging existing orders of possibility. In this context, we may be at risk to render technical imagination legible only within the parameters of technological solutionism or innovation-as-commodity. Because it would exclude speculative or emancipatory configurations within invention, we consequently argue that technical activity should not be reduced to fabrication or production, but understood as an epistemic operation in its own right.

Therefore, we propose the hypothesis that invention, as a technical activity, mobilizes a specific form of imagination; one that requires a rethinking of *technicity* itself. We will thus examine how what we call *technical imagination* engages with the virtuality and potentiality of matter, as it schematizes possibilities and projects relations before they are actualized. In doing so, we aim to discuss how invention involves a speculative or anticipatory gesture: one that does not merely fabricate objects but configures new horizons of intelligibility and consequently of care for our world and existence. It is in this sense that invention must be understood as inherently grounded in technical imagination, and that imagination, in turn, reclaims its

aesthetic and political stakes as a force of world-formation. Within this gesture, the investigation of imagination enriches itself and plays a central role, as such a reconfiguration shifts imagination away from the status of a faculty of representation and toward its function as a vector of *ontogenetic individuation*; i.e., a dynamic through which we will discuss how new symbols, functions and relations take shape.

Our article develops its argument in three stages. We begin by examining the epistemic specificity of technical activity itself, rather than approaching imagination as an isolated faculty. Through a critical reading of Henri Bergson, particularly his distinction between instinct and intelligence, we highlight how technical engagement with the world inaugurates a distinctive epistemic relation. Here, Bergson opens a space in which imagination is not a pre-defined faculty but a problem in formation, that emerges where the human relation to matter, things and tools exceeds both the material sphere of instinct and the formal one of intelligence.

We then turn to Gilbert Simondon, whose work allows us to name and conceptualize this emerging epistemic figure more precisely. We show how Simondon's notion of imagination operates as a structuring and ontogenetic way of anticipating the evolution and formation of our reality. As imagination is examined in its ability to schematize, relate and configure the potentialities of matter in view of invention, Simondon foregrounds its role as an operative force that mediates between disparate elements to give rise to technical individuation.

Finally, we explore the temporal structure of imagination through the concept of *technical intention*. We argue that imagination is not only a bridge between instinct and intelligence, nor a disposition that articulates the properties of material objects in their associated milieu, but a force of temporal projection that organizes reality and configures enactments through how it structures the potentialities of our present. By underlying the transition from virtuality to actuality, we aim to show how imagination becomes the epistemic condition of both technical invention and human individuation, where the act of imagining anticipates the emergence of the technical individual and, by extension, of the human as a being that also dwells through technology.

Taken together, these three moments compose a trajectory that reaffirms imagination as a fundamental vector of technical thought and action. Far from being reducible to a secondary faculty, imagination appears here as a structuring force of invention, creation and possibly evolution. We aim to demonstrate that the distinction between instinct, intelligence and imagination — reinterpreted through the prism of technology — thus outlines not two cultures of imagination, but a complex ecology of imaginative operations that mediate between the living, the symbolic and cultural and the material. This ecology demands philosophical attention not only because it challenges our categories, but because it opens a space in which human beings and technology are co-constituted in and through imagination.

Beyond intelligence and instinct

The question of imagination is often approached as a faculty that must be examined. But what happens when imagination is more specifically approached through its impact on how we consider invention, as a technical activity relaying on a specific mode of knowledge? This first stake returns to Henri Bergson's conceptual framework, particularly his distinction between two modes of knowledge, *instinct* and *intelligence*, although we do not aim to reinforce an opposition between instinct and intelligence within a taxonomy of living beings. Rather, this distinction helps us understand how, through a particular kind of relationship to the world, the possibility of invention as a modality relying on imagination emerges. In other words: under what conditions can a technical activity be said to involve a specific mode of knowledge, that would be invention, rather than being reduced to mere instrumental fabrication?

The philosopher Henri Bergson (1998 [1907], p. 133) distinguishes intelligence from instinct, calling them "two powers, immanent in life and originally intermingled." His analysis aims to remedy a certain lack or misinterpretation within metaphysics as it pertains to the theory of knowledge. His critics aims at philosophical systems that differentiate humans from animals by asserting that the former possess and exercise reason, which the latter lack, and which, in turn, situates them within a hierarchical and vertical order. Bergson, by contrast, holds that the differences among natural orders stem from a horizontal plane, that is, from a difference in kind, not one of degree.

> The cardinal error […] is to see in vegetative, instinctive and rational life three successive degrees of the development of one and the same tendency, whereas they are three divergent directions of an activity that has split up as it grew. The difference between them is not a difference of intensity, nor, more generally, of degree, but of kind[1].

For Bergson, the distinction between intelligence and instinct has guided the evolution of the animal kingdom along different paths. He delineates these two notions to highlight their specific characteristics, although he simultaneously affirms, on the one hand, that every instinct is tinged with intelligence and vice versa and, on the other, that both are difficult to define as they are "tendencies, and not things" (*Ibid.*, p. 136). As such, Bergson's philosophical perspective aims not to establish a hierarchy between species, or a binary opposition between humans and non-humans based on each mode of knowledge, but to articulate the conditions under which emerges a reflexive and structurally mediated relation to reality.

According to Bergson, *instinct* is the capacity for immediate use of the real, that is already present and situated. It tends to cancel out both schematization and planning. Hadi Rizk (2018, p. 90) defines Bergsonian instinct as:

[1] (Bergson 1998 [1907], p. 135)

> [That which] possesses a form of immediate knowledge of its object, which directly resolves itself in an adequately adjusted action that does not proceed from any prior representation of the possible realizable options. Everything occurs as if the execution of the act took precedence over representation, which it tends to cancel out[2].

As an example, organic mediation is instinctual; movement or gesture in themselves are part of the very structure of the living beings.

As for *intelligence*, for Bergson it is the capacity to extrapolate from the virtuality of matter in order to vary its modalities, to structure and organize its components, and so particularly through the creation of artificial objects. Bergson (1998 [1907], p. 139) explains that intelligence, "considered in what it seems to be its original feature, is the faculty of manufacturing artificial objects, especially tools to make tools, and of indefinitely varying the manufacture." Bergson emphasizes that animals are not foreign to intelligence, for they can engage in fabrication; primarily through the use of a pre-existing tool or the shaping of a rudimentary one and secondly because they are also capable of recognizing a manufactured element (for example, the fox that recognizes a trap for what it is). As such, instinct and intelligence both imply different relationship to the thing (material or formal) they help conceive: "Instinct is therefore innate knowledge of a *thing*. But intelligence is the faculty of constructing unorganized — that is to say artificial — instruments. […] What is innate in intellect, therefore, is the tendency to establish *relations*[3] *" (Ibid.*, p. 150).

Instinct is indeed a form of knowledge, but one that is direct: such is the relation that is established when a living being jumps into a body of water to extinguish flames, if it caught fire. Intelligence, by contrast, is a faculty for the creation of mediation that is focused on relations and forms; it apprehends them and extends them in order to generate the schematic structures that are particularly necessary to the activity of fabrication. Such would be the relation instituted when one creates a human chain to carry water from a spring to a burning house — and more so still with the fabrication for instance of a hose. Indeed, the full concretization of a technical being occurs through invention — that is, through the fabrication of the technical individual (be it object, machine, etc.) and the endless evolution of this fabrication. Bergson (*Ibid.*, p. 149) latter precises that "intelligence […] is the knowledge of a form; instinct implies the knowledge of a matter", effectively equating in his vocabulary thing and matter; and relation and form.

Then, for Bergson, intelligence and instinct represent two orders of evolution, which initially overlap but progressively diverge as a species becomes increasingly specialized in one or the other of these directions. As noted above, the difference between these two modes of knowledge does not imply any hierarchy or primacy

[2] Our translation.
[3] We underline.

in value, even if this should obviously be discussed through a more comprehensive approach within current researches in ethology and biosemiotics, as we previously argued by rereading the Heideggerian commentary on Uexküll's concept of *Umwelt* (Lombard, 2024a). However, the innate possession of those two divergent modes of knowledge (instinct and intelligence) entails biological consequences and, notably insofar as intelligence is linked to the act of fabrication, transforms the relationship between knowledge and life. The mode of knowledge becomes a dimension of life and integrates itself into it in a singular manner, which makes it a non-negligible stake in anthropology and epistemology, as it leads to a distinction between the development of the *anthropos* and that of the animal, a distinction that is not unrelated to the work of Leroi-Gourhan.

> It seems that very early on, Homo sapiens made full use of his psychic capacities to probe the immaterial, and that he then had only to wait for the drift of evolution to slowly lead him toward clearer perspectives. If intellectual progress exists, it remains biologically imperceptible and it concerns […] the expansion of means and fields of speculation[4].

In this context, the human being's capacities to establish a schematic and, thereby, fabricating relationship with matter are already fully operative from the very beginnings of hominization. Hominization then allows for an expansion of programmatic and logical relations, but also a very concrete expansion of material capacities. For Leroi-Gourhan, the anthropological evolution of creative intelligence is inseparable from the development of technical means and domains; for instance, the discovery of new materials and chemical reactions. Quantum physics or genetics — like metallurgy or mechanics before them — mark not simply fields of knowledge but fields of application, whose intelligibility depends on a fundamental and originary technical and epistemological relation to the world. Technical activity, in this sense, does not simply derive from biological structures but establishes a specific regime of access to matter.

Yet, this intelligence capable of schematization is based on a specific relationship to matter that remains marked by limitation. Intelligence, as Bergson (1998 [1907], p. 165) sees it, does not engage matter in its fullness, but only selects those aspects that lend themselves to manipulation; it is "at ease in the discontinuous, in the immobile". When intelligence takes material objects into account, it only does so within the framework of their relation — or their potential relation — with one or more other objects. Intelligence here is objectifying, insofar as it carves out from the world a set of objects under the form of discrete elements: "Suffice it to say that the intellect is characterized by the unlimited power of decomposing according to any law and recomposing into any system." (*Ibid.*, p. 157). It isolates, abstracts and

[4] (Leroi-Gourhan 1965, p. 244) Our translation.

combines, but only on the basis of a partial engagement with reality, as it "is characterized by a natural inability to comprehend life" (*Ibid.*, p. 165). Intelligence selects relations of form and quality in order to produce new configurations between things and to concretize them through technical activity and the becoming of the technical individual. Fabrication, then, imposes form upon matter by reducing its richness to what is functionally useful.

However, even if from the standpoint of fabrication, matter appears restrictive and discontinuous, our technical activity retains only that aspect of matter which makes fabrication possible, as Bergson (*Ibid.*, p. 151) highlights:

> This entirely *formal* knowledge of intelligence has an immense advantage over the *material* knowledge of instinct. A form, just because it is empty, may be filled at will with any number of things in turn, even with those that are of no use[5].

Intelligence as this formal knowledge liberates us from immediate necessity, by opening the range of our activity. Indeed, the instrument (constructed by intelligence) "is made of unorganized matter, it can take any form whatsoever, serve any purpose, free the living being from every new difficulty that arises" (*Ibid.*, p. 140). But this freedom is also what defines the limit of intelligence: it does not spring from an absolute principle, but from the constraints of matter itself, and the same instrument is necessarily "an imperfect instrument [which] costs an effort" (*Ibid.*). Intelligence, for Bergson, is not an autonomous power of the mind; it is derived from the demands of reality and can only operate within the formal conditions instituted by it.

According to us, this dual nature of intelligence, which is liberating in its versatility yet constrained by the very material it manipulates, underscores a deeper tension in Bergson's analysis. Intelligence, while it expands the realm of possible actions through the schematization of form, remains dependent on pre-existing conditions and cannot generate its own ends. It seems to operate reactively, structuring responses to material constraints rather than reconfiguring those constraints themselves. In this sense, the limit of intelligence lies in its derivation from matter: it is not a faculty of projection in itself, but of adaptation. This tension sets the stage for the emergence of another modality; one capable not just of selecting from given possibilities but of anticipating new ones. Neither reducible to the immediacy of instinct nor to the formalism of intelligence, technical activity opens a space for another mode of engagement with reality; and invention, which entails the using of both things and relations, or both matter and form, unveils here an important framework; i.e. the question regarding technical imagination.

[5] The author underlines.

Imagination and invention

While Bergson's analysis of instinct and intelligence enabled us to identify the limits of existing categories for grasping technical activity, it is in Simondon's work that the intuition of a third term takes its full conceptual form. To address the complexity of invention, we must shift toward a framework in which imagination becomes epistemologically active in the very structure of technical activity.

First of all, we must remind that, while Simondon's lesson *Imagination and invention* (1965–1966) offers a powerful conceptualization of invention as the resolution of incompatibility — whether between a milieu and an organism or among the internal components of an action — it treats invention in a broad sense, as any operation that overcomes an obstacle. In this framework, invention may include improvisation, collective action or problem-solving strategies that do not necessarily involve any technical activity. The often-cited example of travelers moving a rock that individually blocks their path but can be shifted collectively illustrates the idea that invention lies in the emergence of a functional compatibility, not in the production of a new technical object. In fact, in his lesson, Simondon underlines that:

> The imagination as anticipation is thus no longer a function severed from reality and deployed in unreality and in fiction; it triggers an effective activity of realization […]. The modality of the imaginary is that of potentiality; it only becomes the modality of unreality if the individual is deprived of access to the conditions of realization[6].

In this more general sense, the capacity for imagination is not the exclusive privilege of the human being; rather, it is a possibility inherent to all living beings, insofar as each is an individual carrying and shaping its own associated milieu, as Simondon (2017 [1958], p. 60) highlights: "The reason the living being can invent is because it is an individual being that carries its associated milieu with it." Consequently, invention does not refer solely to construction or fabrication, but also to any capacity for problem resolution, in the sense of inventing a solution to a situation. It is a faculty observable across the entire spectrum of living beings: in humans, but also in animals (escaping or confronting a predator, finding shelter, etc.) and even in plants (drawing water from deep sources, seeking light, etc.). Inventive behavior, in its basic sense, does not mark a strict threshold between humans and other living beings. However, and more narrowly, the present article bases its focus on invention as it manifests specifically in technical activity, that is, in the fabrication and enaction of objects, operations or systems. Simondon's theory of technical imagination allows us to make this shift, as it redefines imagination as a modality of knowledge that is productive and anticipatory. With technical imagination more precisely, what is at stake currently is its operative role in shaping not just solutions, but new objects and *forms*,

[6] (Simondon 2022 [2008], p. 55)

that can hold within being and restructure the very conditions of further actions.

As such, the epistemological framework laid out by Bergson provides a fruitful contrast through which to grasp the distinctive nature of what Simondon (*Ibid.*, p. 74) names *technical imagination*[7]. Situated between the poles of instinct and intelligence, Simondon's notion of imagination introduces a third modality: it is capable of intellectual schematism, yet remains instinctive; that is, material. It allows Simondon to theorize his concept of technical imagination as a process of *anticipation*, thereby linking it to invention, which adds an objective reality as soon as the conditions for the emergence of that reality are fulfilled.

We encounter here a fundamental divergence between *technical imagination* in Simondon's works and *formal knowledge (or intelligence)* in Bergson's ones. As mentioned, for Bergson, intelligence (when it is oriented toward fabrication) affects matter in a reductive way, selecting from it only what will prove useful. As Rizk (2018, p. 93) explains, it "circumvents the question concerning the essential nature of matter, its mode of generation or its relation to life — that is, to information". In this framework, complexity and plasticity are sidelined in favor of instrumental extraction. Water, for instance, is subsumed under characteristics such as liquidity or non-flammability, which are later exploited for practical use.

By contrast, for Simondon, *technical imagination* reveals a dimension of matter beyond the material characteristics of the thing. It opens up the unrealized potential and flexibility of a being in the process of becoming. Technical imagination thus incorporates the persistence of representations, of meaning within matter itself; it is a mode of attunement to the potentials immanent in the material world. For Simondon (2017 [1958], p. 74), it is defined as "the capacity of the prediction of qualities that are not practical in certain objects, that are neither directly sensorial nor entirely geometric, that relate neither to pure matter nor to pure form, but are at this intermediate level of schemas."

This ontological question is also an important stake within the field of semiotics, as Simondon (*Ibid*., p. 74) underlines that imagination, presupposes the prior existence (within the aforementioned ground) of *dynamic "symbols"* — that is, symbols that admit their own plasticity and are capable of assuming multiple forms. Their dynamism derives from the ability of things to present themselves under various modalities and give rise to a broader range of possible invention — water, for example, can be compressed, vaporized, channeled, conducted, etc. — each becoming a possible axis for technical concretization. At the same time, Simondon (*Ibid.,* p. 74) insists that technical invention also presupposes the existence of static or systematic symbols — symbols whose "pre-existence and coherence of representations" ensures that technical projections can stabilize, take hold and be shared. These symbols

[7] We also find "creative imagination" (*Ibid.*, p. 60) and "inventive imagination" (*Ibid.*). It is important to underline that image and imagination are major concepts in Simondon's work; for more information about them: (Duhem 2019; Simondon 2013; Simondon 2022 [2008]).

are not fixed by nature but by consistency: they support the reliability of physical and mathematical laws without which invention could not operate. In this sense, water's conductivity, though dependent on certain physical conditions, is regular and dependable enough to enter into circuits, to be modeled, to be inscribed in a predictive system of relations. Despite their plasticity, the physical attributes of water possess systematic coherence.

At stake is the idea that representation, when understood as projection within a system of coherent anticipation, is not an abstraction detached from reality but a way of entering into the symbols underlined in invention. This is why Hadi Rizk (2018, p. 92) underlines that the mind "exists as a creative void that freely conceives relations among objects, or unprecedented configurations of reality[8]". Even something as seemingly stable as water becomes, under technical imagination, a vector of transformation. It is not only what it is; it is what it may become, depending on the relations in which it is inscribed. In this sense, technical imagination suspends fixed identities and opens onto a domain where matter becomes modifiable and relationally plastic. In short, water is not necessarily liquid and non-flammable; it is so, let us say, by virtue of a selection among its material characteristics. But *technical imagination* can render water something non-liquid, or flammable, or semi-liquid, or conditionally flammable, because it enters into a relation of free association with the object's qualities. This allows us to freely reconfigure our representations, in order to exercise this modulation upon a world in which matter, thus in a constant process of restructuration and reshaping, becomes itself as plastic as the mind. This capacity to form unprecedented configurations is not rooted in a power of abstraction that would be separated from the world, but in a situated entanglement with what Simondon (2017 [1958], p. 59) calls the "*associated milieu"*, where the individuation of a technical object is based on the causality and recurrence that "the technical object creates around itself and that conditions it, just as it is conditioned by it" (*Ibid.*). For it is indeed within the *associated milieu*, which is both a natural and technical milieu, that both creative (technical) imagination and human activity can operate. They are not static faculties but ongoing mediations, that guarantee that technical imagination is a proper "culture" in the sense of a concrete mode of engaging with reality.

> The compatibility of elements in a technical individual presupposes the associated milieu: the technical individual must therefore be imagined, which is to say presupposed as already being constructed in the form of an ensemble of ordered technical schemas; the individual is a stable system of the technicities of elements organized as an ensemble[9].

Let us remind that for Simondon, technical individuals are coherent system of in-

[8] Our translation.
[9] (*Ibid.*, p. 74)

terrelated technical elements. A motor, for instance, is composed of springs, shafts, cylinders: each is a technical element whose properties and potentialities must be understood not separately, but within a system. Consequently, *technical imagination* is the modality that enables invention, considered as a technical activity, through the knowledge of the technicity of elements; it becomes a vector of potentiality, enabling configurations that are not yet actually material. Yet this openness does not imply autonomy: Simondon's concept of imagination relies on proper elements in order to catalyze the emergence of new configurations.

This example underscores a key shift: technical imagination is not simply directed toward the material object (as would Bergson's instinct) nor toward the properties or relations of matter (as would Bergson's intelligence), but toward the relations among those properties and their capacity to be reconfigured in new contexts, i.e., the knowledge of their technicity. The human being does not merely recognize matter, in that it possesses embedded forms, but configures it according to schemas that precede its manifestation. In this sense, technical imagination differs from both instinct and intelligence: it is an anticipatory modality that engages with the technicity of matter, not merely with its properties, or with things themselves. Let us consider a simple example. At the outbreak of a fire, a person searching for water in the form of a garden hose already knows that this tool (traditionally used for gardening) can be used to fight the flames; and so even before having actually spotted the hose. The hose is not sought as an object already defined, but as a bearer of a function that is linked to its potential to channel water. Technical imagination thus configures relations in advance of perception, articulating material affordances before the object is even located in the field of experience. Strangely, that means we have placed the property of non-flammability *in* the garden hose and not only in the water; not because the hose itself possesses the property of being non-flammable, but because it carries precisely *that which carries* non-flammability (i.e., water). The diversity of an element's use does not derive solely from knowledge of its technical characteristics and forms, but from the knowledge of its *interconnections* among other elements of the world, based on its associated milieu. Technical imagination helps us articulate the conditions under which invention becomes a reflexive and structurally mediated relation to reality — a mode of projecting and actualizing potentials through tools, obviously, as instinct does, through operations, forms or relations, indeed, as intelligence does, but also through schemas and representations, i.e., through the knowledge of the technicity of technical elements and individuals themselves, as Simondon (*Ibid.*) underlines: "Invention, which is a creation of the [technical] individual, presupposes in the inventor the intuitive knowledge of the element's technicity[10]". To invent such a system as a motor, for instance, requires not only knowledge of how a spring compresses or a shaft rotates, but an ontological awareness of technicity itself — the

[10] Our translation.

idea that elements can be schematized, composed and transformed, that a spring and a shaft *can do things*, can be articulated, before even realizing how they can be articulated. The distinction that we could underline here, between the idea of a mind that projects forms and one that co-evolves with matter's technicity and the relations of its associated milieu, sets the stage for understanding technical imagination as a force that is both anticipatory and representative on the one hand, and embedded in concrete structures on the other.

This final insight leads us back to the specificity of human imagination in Simondon's account: it is not that we know how things work, but that we intuitively recognize that things *can* work — that they are structured by a potentiality that imagination reveals and organizes. In this way, technical imagination becomes a productive force, rooted in an ontological openness to reality. In this context, invention itself is reframed, as it is approached not merely as a functional modality, but as an *ontogenetic* one: no longer the mere application of pre-existing knowledge and relations, invention implies the transformation of reality through the modulation of matter, grounded in the affordances of a given milieu. In this sense, technical imagination does not simply support transformation; it enables it, by embedding technical activity within a process of ontogenetic becoming. In this singular function – imagination as an ontogenetic modality – the human being knows *intuitively* the *ontological technicity* of elements or rather we know that elements are *technical*, meaning that they open onto a potential for the actualization and transformation of matter. One might recognize here a philosophical intuition already suggested in reflections on hominization: for instance in Sloterdijk's work (1999, p. 124-125) where he writes, that "with the stone, the fundamental trait of the instrument's *handleability* takes shape for the first time in the world of existence" – as such, we could say that the technicity of the stone emerged as a moment in which the stone ceased to be merely a thing and became something else, such as a tool, but also the bearer of relations and of properties and extensively the bearer of schemas and representations, such as those grounded in the simple fact that it could be held in our hand. This anthropological shift signals not merely the birth of instrumentality but the inauguration of a new epistemic regime, one in which being and knowledge enter into a co-constitutive relation.

This transformation marks a decisive inflection in our inquiry. It no longer concerns only the link between a mode of knowledge and human life (with Bergson) or between a mode of knowledge and more precisely technical activity (with Simondon), but also — and most critically — between a mode of knowledge and the ontological status of things themselves. In other words, technical imagination is not simply a way of engaging with the world; it is a mode through which the world, and things within it, becomes expressible and consequently transformable.

In this light, technical imagination opens onto a deeper question concerning the relation between epistemic plasticity and ontological openness — that is, between

the ability to configure and reconfigure relations among beings and the structure of reality that allows such reconfigurations to take place. As such, technical knowledge becomes a site of encounter between human individuation and material individuation, a crossing point where invention ceases to be a merely anthropological gesture and becomes an ontogenetic process, by which both beings and relations emerge.

This is why the question of technicity, as understood here, acquires an onto-anthropological scope: it enables us to examine not only the distinction between different types of fabrication, but between different regimes of epistemic access to reality. To understand how imagination operates as an ontogenetic modality, it becomes necessary to explore not only its relation to an associated milieu, but also its temporal weight: imagination is not only anticipatory but projective in that it configures what has not yet come into being by schematizing causal relations in advance. Technical imagination consequently implies a relation to anticipation and representation, so that it can really be understood as something that organize our relation to the future and the modalities of transformation within our reality. Simondon (2017 [1958], p. 58) also suggests that what mediates the relation between humans and the world is neither the imitation of nature nor the mechanical reproduction of existing technical forms, but this operative structure of anticipation, that requires "the use of an inventive function of anticipation, which cannot be found in nature or in already constituted technical objects." In this view, it is not a question of precedence but of co-constitution: the technical individual and the function of invention emerge together, as part of a shared ontogenetic process.

> Only a thought that is capable of foresight and creative imagination can accomplish such a reverse conditioning in time: the elements that will materially constitute the technical object and which are separate from each other, without an associated milieu prior to the constitution of the technical object, must be organized in relation to each other according to the circular causality that will exist once the object will have been constituted; thus what is at stake here is a conditioning of the present by the future, by that which is not yet[11].

As such, we must take into consideration, in this function of anticipation based on the technicity of technical elements and their associated milieu, the weight of the movement of invention itself, that works to actualize a virtuality: and that we define as *intention*.

The futural function of technical intention

Having clarified the epistemological grounding from which the technical imagination at the heart of invention emerges, we now turn to a fundamental aspect of this

[11] (*Ibid.*, p. 60)

dynamic that has so far remained implicit: namely, that the relation of anticipation and representation that grounds invention (still considered as a technical activity involving the production of objects, systems, machines, etc.), and that Simondon (*Ibid.*, p. 58) calls here the "*inventive* function of anticipation" must be conceptualized in itself.

In order to discuss the operativity that lies in invention and that actualize the representations of technical imagination, we name this phenomenon *technical intention*. Our hypothesis is that intention is not a secondary concept, but the operative expression of imagination itself. It marks the threshold where imagination is no longer merely a faculty of representation of the technicity of elements and individual, to become the structuring principle of transformations in the world.

More precisely, we propose that*, in the process of invention, the very operativity of technical imagination depends on intention*. As such, technical intention is the structure that makes technical imagination an active and operative process, during the process of invention, and from what emerges the actualization of a concrete technical individual. It is what lies under technical enaction.

As it concretizes the temporal logic of invention, the concept of technical intention allows us to extend the discussion beyond the proper intuition of technicity that Simondon underlines, in order to explore how technical imagination engages with time, virtuality and the material conditions of its concretization. Here, as argued, imagination does not only operate as an act of representation, but becomes in itself the vector of a process through invention. When Jean-Yves Château (2010, p. 32), while re-reading Simondon, emphasizes that "technical invention is an ontogenetic function[12]", he means that it is neither an act of mere discovery (of possibilities or properties) nor of speculation, but a process of actualization: "It brings forth an unprecedented being, which is neither discovered nor merely imagined, but viable: an object that holds itself technically in being" (Château 2010, p. 32). Any technical individual brough about by a technical invention — whether it be an object, a system, a machine and independently of its degree of complexity — must be understood as the actualization of a prefigured yet undetermined configuration. We propose that such a movement requires what we called technical intention. In this context, a proper technical intention is the condition of possibility for the actualization of an invention. It helps the concretization of the technical imagination's schemas into a proper technical invention. We could say that it is imagination as it organizes itself into a project for the transformation of reality (i.e., invention).

Consequently, we argue that it is through intention that imagination acquires the concrete modality that Château and Simondon both underlines, by opening a relation both spatial and temporal to the world, in which transformations become possible. Indeed, the notion of technical intention is here of major importance, as it makes

[12] It is important to underline that Simondon mainly discuss the notion of ontogenesis at length (Simondon 1995).

it possible to articulate how the human being does not simply imagine objects by composing with their relations, but participates in a more complex operation: that of modulating future realities by drawing on the virtual affordances of the present. As imagination's active function, technical intention concretizes representations and coordinates elements toward an end that did not yet exist. In this sense, imagination becomes a mode of ontological configuration; it is not just an antecedent to fabrication, but the matrix within which technical activity becomes thinkable and realizable. As such, imagination becomes both projective and productive as it configures new modalities within which invention can explore. If invention is the concretization of a virtuality into actuality, it can also lead to the transformation of the conditions of reality itself.

This introduces a crucial articulation between space and time: technical imagination draws upon reality not just retrospectively, but prospectively. It stretches reality forward into new arrangements by actualizing latent potentialities within a given milieu. Consequently, as we aim to examine technical imagination insofar as it operates through invention, this entails foregrounding the question of virtuality as an operative dimension within technical imagination itself. Indeed, we must underline the *temporal component* of our reality, upon which the *virtuality* of matter depends. As such, invention constitutes the passage from virtuality to actuality, epistemologically initiated through the intentional and operative modality of imagination.

This is where Simondon's critique of Aristotelian hylomorphism[13] becomes especially illuminating. It helps us explore what is precisely at the heart of this phenomenon of actualization. For Aristotle, the form of the work first exists "in the mind of the artist[14]", which implies that form is a content, that informs passive matter. However, Simondon confronts this Aristotelian hypothesis by articulating form to the dynamics of individuation, as a logical sequence among actualized realities, in which each form arises from a system of forces and relations that are situated in time. For him, it is the *ground* (or "content[15]") that holds potentiality, that is, that comes into act only at the precise moment of enactment — and that has always been present at the very moment it ceases to be a future potentiality. We might say, then, that for Simondon, virtuality does not prefigure actuality, but coexists with it in a regime of tension. His notion of *ground* holds potentiality not as something to be projected or represented, but as something to be enacted — something that is present only at

[13] Mainly in his first work on individuation (Simondon 2013).

[14] (Aristote 2014, p. 153, Livre VII, Z, 7 (1032a-1033a) < Analyse du Devenir – Ses différentes espèces) Our translation.

[15] We reproduce here part of the traductors' note regarding the translation of the French concept of "fond" into *ground* in the English version of the *Mode of Existence of Technical Objects*: "The phrase 'fond et forme' nearly always means 'content and form', and […] Simondon is here employing this typical expression, but changing the content of its meaning […]; 'fond' here and throughout is rather used in the sense, taken from *Gestalt* theory, of a 'ground' or 'background' against which a form or figure can emerge — the constant with reference to which a variable can emerge." (Simondon 2017 [1958], p. 59, TN)

the moment of its actualization and whose existence collapses the distance between future and present.

> The relation of participation that links forms to ground is a relation that bestrides the present and diffuses an influence of the future onto the present, of the virtual onto the actual. For the ground is the system of virtualities, of potentials, forces that carve out their path, whereas forms are the system of actuality[16].

This context has strong implications for the fabrication of any technical individual: its concretization does not emerge *ex nihilo*, nor only based on associations of previous relations that were existing in other things. It arises from a field of compossibility[17] — of potential futures that coexist without mutual exclusion — i.e., a field of virtuality, a ground composed of compossible elements and latent potentials that precede the actuality of the object. Here, the notion of invention regains all its epistemological stakes. The *form* that the technical individual ultimately adopts distinguishes it from this *ground* by its determinacy, its fixation in reality. Here, the act of concretization marks a threshold: the passage from the fluidity of virtuality to the structured specificity of form. It is this transition that technical intention mediates by bringing into the present a form that, until then, remained suspended within a regime of potentialities.

To illustrate with an example, consider the case of the automobile. The technical principles underlying it — energy transfer, mechanical rotation, gear systems, etc. — are not created e*x nihilo*, but assembled from a field of already existing relations. This is a transductive system, which means "a process of ongoing individuation" characterized as the "correlative emergence of dimensions and structures within a being in a state of preindividual tension — that is, a being that is more than unity and more than identity, and that has not yet undergone a phase shift in relation to itself across multiple dimensions[18]" (Simondon, 2013, p. 33). Yet this field of already existing relations or "preindividual tension" (*Ibid*.) was not actualized until the object came into being. Technical imagination operates here as a mediating schema, not a blueprint imposed from an external source, but a configuration that emerges from within the tensions and compatibilities of virtuality. The result is not predetermined, but oriented; it is a trajectory or a correlation rather than a plan. In this sense, technical imagination does not command concretization, but summons it, by activating a structure of potentiality without closing it in advance.

[16] (*Ibid.*, p. 61)

[17] Compossibility refers to the set of possibilities understood as innumerable, unpredictable and continuously existing. It can be grasped through Plessner's definition of an "effective possibility, a power that is, [bearing] a relation to the modalities of the present and of the future. [It has] the meaning of a not-yet that lingers within the now" (Plessner 2017 [1975], p. 295). Our translation.

[18] Our translation.

Therefore invention, as made possible by *technical imagination,* occurs both temporally and spatially; by drawing on the plasticity of properties and the virtuality of matter, technical individuals are extracted from a kind of transductive *emptiness or "void", to bring back the word of Hadi Rizk* (2018, p. 92)*,* to which it seemed not to preexist — unlike other natural and/or living beings. The technical individual does not emerge from a pre-given "lineage" (Leroi-Gourhan 1971 [1943], p. 14) or deterministic sequence, nor from those technical families whose exploration was the goal of Laffite's mecanology (Lafitte, 1933; Simondon, 2009), but from a contingent recomposition of elements whose assembly was not inherent to their prior state.

As such, we argue that *technical intention* must strongly be examined as a "futural function" (Simondon 2017 [1958], p. 60) in relation to *time,* not merely in a psychological or representational sense, but as what configures the preconditions for invention. This anticipatory function is capable of coordinating multiple elements, way before assembling them into a coherent totality. This modality to foresee, arrange and modulate the interactions among potentialities before and during the act of fabrication is not simply about forming representations but is about projecting a reality that is not yet, and that becomes possible through the structuring action of intention. It has an epistemological and ontological weight.

In this context, technical imagination plays a transformative role. It does not merely select among pre-existing futures; rather, it draws forth and activates compossibilities that had not yet been actualized. The field of virtuality from which an invention emerges is not a deferred future waiting to arrive, but a present structure of intentionality, that we could describe as a set of relational possibilities that anticipate concretization without being subordinated to a linear temporal unfolding. The technical individual, once realized, retroactively appears to have "always" existed, insofar as its conditions of existence were already latent within the structure of reality.

This latency, however, should not be mistaken for passivity. What is at stake in this structure of virtuality is not just a reservoir of actualizable forms, but a dynamic field whose tension and plasticity open the real to transformation. It is precisely this dynamism of the real — its capacity to be structured otherwise — that Simondon foregrounds in his distinction between form and ground, that must also be understood as a distinction between actuality and dynamism. Forms, he writes, are "passive insofar as they represent actuality" and become active only "when they organize in relation to this ground, thereby bringing prior virtualities into actuality" (*Ibid.*, p. 61). That is of paramount importance as an ontological stake, as we contend that the field of virtuality from which invention emerges is not a passive reservoir of possible configurations, waiting to be realized; it is a structured yet open ground that is tense, plastic and responsive to intervention. It is therefore from this ground of potentialities that technical intention brings forth and thereby dynamizes a form in the sense of its physical concretization — as a technical individual. In this sense, the act of

invention does not simply instantiate a form within reality but participates in the transformation of what reality can become. The act of invention, understood here as the outcome of technical imagination, emerges as a point of articulation between the abstract and the concrete. It realizes a mode of ontological bridge or passage, as in Simondon's (*Ibid.*, p. 61) terms: "Invention is the taking charge of the system of actuality through the system of virtualities, the creation of a unique system on the basis of these two systems." This passage is not a simple transfer, but a synthesis that gives rise to a new unity: a technical individual that came-into-being from a choreography of virtual elements and actual constraints. As such, technical activity engages reality not passively, but transformatively or dynamically, through a technical intention. It absorbs the surrounding field of actuality and reconfigures it in light of what could or ought to be altered. And in this sense, imagination is no longer a representation of the not-yet, but the mode by which the not-yet is made thinkable and eventually, actual.

The ontological point at stake in the distinction between actuality and virtuality is not merely about the emergence of concrete forms, but about affirming the dynamic structure of reality itself. To conceive of the virtual as more than a passive background to be actualized is to reject a static view of reality as inert matter awaiting form. Instead, reality is here understood as inherently charged with tensions, potentials and of course a plastic openness to transformation.

More importantly, what is at stake here is not only an ontological question, but an ethical one. If we conceive invention only in terms of fabrication — as efficient production of usable forms — we risk reducing the world to a stock of resources waiting to be exploited, organized or instrumentalized, and reducing imagination to a tool aiming at this extraction, as we articulated in previous works (Lombard, 2023). But if we understand technical imagination as a mode of engagement with the virtual structure of reality, then invention becomes something else: a way of shaping futures and societies, of dwelling in the world otherwise. In this light, technical imagination is not only productive; it can be caring and responsive. It calls for a form of responsibility adequate to the transformations it sets into motion, as that is grounded in an awareness that technical intention is never neutral, but always intervenes in the becoming of reality. This helps us to de-essentialize technical invention as mere alienating production and to reconsider technical activity not just in terms of efficiency or utility, but as a mode of engagement with the becoming of the world.

Conclusion

Throughout this reflection, imagination has progressively emerged as a modality of relation, i.e., an epistemic force embedded in our engagement within the domain of technical activity. By attending to imagination in its operative connection to (technical) invention, we have aimed to clarify how it functions as a condition for the emergence of technical individuals. By tracing a philosophical path from Bergson

to Simondon, our inquiry has traced a conceptual arc in which imagination becomes thinkable as a generative dynamic at the heart of invention. It is through imagination that new technical forms are produced, not by imitation or extrapolation, but through the activation of latent potentialities within matter. It is imagination that mediates between disparate elements — between form and material, between problem and resolution — by projecting relations where none are yet actual. And it is through this capacity to project and reconfigure that imagination contributes to an ontogenetic transformation: not only of materials or tools, but of the human itself, as a being shaped by its relation to technology.

This sense of anticipation, of engagement with virtuality, gains further complexity when understood through the notion of intention. No longer just an epistemic mode of knowledge, imagination appears as the interface of dispersed potentialities and their actualization into forms. This trajectory of becoming, strongly embedded in the intention that allows for technical invention, allowed us to describe technical imagination not simply as a faculty, but as a relation to time and to matter that affirms its full philosophical force.

Our inquiry has allowed us to approach technical imagination not as a static concept, but as a dynamic structure unfolding across instinct, intelligence and intention, that takes on specific contours in the context of technical individuation and could be called one among the "culture" of imagination. But it has also open major ethical issues. First, on the role of imagination in shaping the future of societies. If technical imagination constitutes a mode of ontological transformation, then it plays a foundational role in how futures are conceived, projected and made real. As we increasingly intertwine with complex technical systems, it becomes urgent to understand how imagination operates within and through these systems — not only in producing new tools but to frame the path for the evolution of our societies. Second, we must ask whether imagination is exclusively human, or whether it can be extended — conceptually or functionally — to non-human beings; both for animals as we briefly discussed, but also for technical objects themselves, as they (and mostly with deep learning technologies in artificial intelligence) now open new avenues to think about the categories we constitute around us (Lombard and al., 2024b). If technical imagination is situated within a milieu of associated elements, as Simondon suggests, then the autonomy of certain technical systems may eventually support modes of anticipation, schematization or projection that bear a structural resemblance to what we call imagination — mostly as a cognitive function. This possibility is not to be affirmed lightly, but neither can it be dismissed without closer philosophical scrutiny. What are the criteria for developing imagination? Must it be reflexive, embodied? Or can a system capable of generating and selecting among virtual relations to the world — however minimally — participate in the field of imagination?

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From the Bible to Brecht's Theatre: Translation, Intertextuality, or a New Narrative? The Judgement of Solomon and the Judgement of Azdak

Maria Fernanda Palma

Abstract:
There is a complex connection between justice and truth. Comparing Solomon's story in the biblical *Book of Kings* with the *The Caucasian Chalk Circle* by Bertold Brecht, a different way of viewing those relations can be recognised. By changing the premise about what is considered the factual truth the logic inference on how to decide each case leads us to a different conclusion.
The choice of this principle depends on the ethics and on the concept of justice one has. This choice relies on historic and social context. The premises about motherhood are different in both the Bible and Brecht's theatre. The question "who deserves a child" is replaced by "what is best for the child". AI algorithms could also help to understand what are we thinking while deciding these cases. Understanding how we think provides an opportunity for us to reframe our premises.

Keywords: *connection of truth and justice; judgement of Solomon; judge Azdak; Bertold Brecht; Caucasian Chalk Circle; syllogisms of justice; intertextuality; AI; judgement construction, literary imagination.*

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Resumo:
A Justiça tem uma conexão complexa com a Verdade: comparando a História de Salomão no *Livro dos Reis* da Bíblia com o *Círculo de Giz Caucasiano* de Bertold Brecht, podemos observar uma maneira diferente de ver essas relações e constatar de que modo, ao mudar a premissa sobre o que é considerado verdade factual, a inferência lógica sobre como decidir cada caso leva a uma conclusão diferente.
O princípio moral pressuposto pelo Direito é a chave para encontrar a justiça de uma solução. Escolher esse princípio depende da Ética e do conceito de Justiça de que se parte. E, essa escolha depende do contexto histórico e social. As premissas sobre a maternidade são diferentes, tanto na Bíblia quanto no teatro de Brecht. A pergunta "quem merece uma criança" é substituída pela pergunta "o que é melhor para a criança". Os algoritmos de IA poderiam ajudar a compreender o que estamos a pensar quando decidimos esses casos. Entender como pensamos oferece-nos a possibilidade de rever as nossas premissas.

Palavras Chave:
Conexão entre Verdade e Justiça, história bíblica de Salomão, juiz Azdak, Bertold Brecht, Círculo de Giz Caucasiano, Silogismos da justiça, intertextualidade, criatividade do Direito, IA, justiça, criatividade, construção do juízo, imaginação literária

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1. Traditional justice and creative justice: The same imaginary story, two different narratives, or a counter-story?

The issue we will address concerns the central relationship between truth and justice. We will not start from any premise about what is true or just; that would be impracticable. We would certainly get lost on a way that is highly intricated. However, a certain apprehension to treat two stories of justice and truth, whatever that might be, is necessarily present in this text that takes its inspiration from two imaginary stories, each in its own way.

To make our ideas clear we use two examples, one from the Bible, that is presented as historically grounded, and another coming from pure literary imagination (theatre): *The Judgement* of *Solomon* in the Bible[1] vs *The Caucasian Chalk Circle* by Bertold Brecht (2009).

Both The Bible and Brecht use a similar case: To whom should a child be given in a certain dispute? In both stories, the question is how to decide the dispute between two women over the custody of a child. In the biblical story, the question is formulated as: who the true mother of a child is, while in the story introduced by

[1] The First Book of Kings 3: 16-21 (retrieved August 21, 2025 at https://mechon-mamre.org/p/pt/pt09a03.htm#16).

Brecht in his *Caucasian Chalk Circle*, the question is a decision about who deserves the child.

Apparently, the legal issue is the same: to know how to prove maternity and maternal powers. It is a situation that, transposed to our days, would correspond to a family law issue, perhaps closer to disputes between parents about the custody of a son or daughter. But that can transcend the controversy between father and mother and, in new families, reach the dispute between two mothers and two fathers, e.g. in same-sex couples. However, the background of the two stories, what justifies the appeal to the court, is apparently a factual issue – namely, who is the true mother of a child. Is it the biological mother or the person who really cares for the child? Nonetheless, the story given by the Bible is different in its context from the story used by Brecht (which is not only reminiscent of the scriptural text, but also of a Chinese legend[2]).

But let us begin by trying to understand a certain oddity in the biblical story of the *Book of Kings*. The two women who compete for the children are prostitutes who live together, obviously in Solomon's court, and who, under these circumstances, access the King's justice, autonomously from the child's father, which is not-existent in the story. Both fight for what is deeply valuable to them: a child. Feminist interpretations of this biblical story are interesting because they emphasise that, in those times, prostitution was a common way of life and that a relationship between prostitution and the organisation of the economy should be recognized [3]. But what, for us, the fundamental issue is how a child can be a good endowed for the two alleged mothers.

Solomon's idea of justice resolves the case in a rather sadistic manner: to cut the child in half with a sword to resolve the case with impartiality. However, the biological mother's appeal shows Solomon that, by renouncing the child, only she could be the true mother. Solomon, said to be given the gift of wisdom by God, thus finds the perfect expedient to discover the truth.

Similar procedures may be found in other biblical stories: a climax is used to discover truth as something that reveals itself in an unexpected way. For example, in the *Binding of Isaac* commanded to Abraham by God, the lamb that will be sacrificed instead of Isaac appears in the final moment, thus showing to Abraham that God, despite having ordered the sacrifice of Isaac in dreams, could never really intend to do so.

That was precisely what Kierkegard tells in his *Fear and Trembling*[4], and what was inscribed in the heart of Abraham – the confidence that God would not actually want the sacrifice of Isaac – would be the true image of a unique God, different from all the gods that were worshiped with human sacrifices. Through the climax and the threat to life itself, a God who favours love reveals his criteria, showing through the

[2] Liu (2013)
[3] Ashe (1991)
[4] Kierkegaard (1983)

error and misunderstanding of human beings that God's own justice coincides with the most natural intuitions and desires of human morality.

The basic intuition on which Solomon bases his wise judgment is that biological mothers love their children more than they love themselves. This is his true premise, which, here, we will name as "premise of biological love and naturalist ethics".

Unlike Solomon, the story imagined by Brecht in *The Caucasian Chalk Circle* does not set two women of equal status against each other. Face to face, Brecht puts a noble and a commoner, a mother of blood who seeks to keep her son to ensure her social position, and a poor woman of the people who has nothing of her own, but who cared for the child and truly loves her. Apparently, it is the same story, but everything is reversed. Who ultimately loves the child and prevents the chalk circle test from injuring or killing it, renouncing the child, is Grusha, the nanny, the caretaker, who is not the biological mother.

While Solomon follows the moral conviction of tradition, Brecht's judge Azdak surprises, following the climax, with a non-traditional moral statement: children should stay with those who love and protect them, regardless of blood ties.

It is known that Brecht's theatre sought to convey a moral lesson, just as in the Bible, but what is interesting here is that what surprises in the Bible is that truth lies in what we know by tradition, whereas in Brecht truth lies in what awakens an attachment based on a supposed universal sense of justice. If, in the Judgment of Solomon, justice is based on the truth of biological facts and traditional beliefs, in Brecht, a dispute over the maternity of a child is transformed into an argument about the value of a universal criteria of justice. Biological facts do not appear in Brecht's foreground, but instead convictions of universal justice and social facts. Brecht, in fact, sought to extract from the *Chalk Circle* trial a political lesson parallel to his Marxist ideology, according to which the goods should belong to those who care for them through work and not to the owners of capital or to owners by succession. The entire play, in fact, develops in a context of dispute over private property at the time of the Russian Revolution and is a literary text ideologically directed towards the purpose of legitimising an anti-capitalist society.[5]

Despite this clear purpose, Brecht assumes what we could qualify as an algorithm or a general, universal mode of reasoning in order to construct a new moral framework. One based in the value of human action throughout History as a means to achieve collective good. And, in this order of ideas, mothers are not owners of their children only because they are biological mothers but because they care for the well-being of children.

[5] See for example Chege (2025) and also Welinga (2025) or Essi/Akas (2024).

2. A counter-story? Algorithmisation of the two stories

But is BRECHT's text a counter-story of the *Judgment of Solomon*? In one sense, it is, and in another sense, it shares a similar basic reasoning.

It is a counter-story, inasmuch as it challenges the assumption that biological mothers deserve to keep their children because their love is greater than any other women, and it is a counter-story insofar as the truth that is sought is no longer who the biological mother is, but who deserves to be considered the best mother, the true mother. However, just as the Solomonic judgement, Azdak's judgement shares a division between those who are good mothers and deserve to be recognized as such by justice and those who do not, based on their behaviour, in a punitive and retributive logic of the Old Testament.

In contrast, for example, the *Parable of the Prodigal Son* in the New Testament offers a story that allows a different reasoning. There, the father favours the undeserving son, who spent everything he had and abandoned his father's house, giving himself up to vice and sin, fell into disgrace and repented, over the son who did everything well.

The choice here has to do, not with deservingness but with the greater need of one relative to the other. The choice here is not about who deserves, but about who is in more need. On the contrary, one could say that Brecht adopts the same point of view because he gives the child to the woman who does loves the child, thus defending the interests of the child In any case, we believe that our proposal may be interesting: to relate each of the two judgements to the building of a kind of decision-making algorithm and then analyse what is important in them for setting up a reasoned justice and for the relationships between truth and justice.

Finally, let us clarify what is explicit and what is implicit in the decisional syllogism. Let us compare the two stories through common argumentative syllogisms: how can the major premise be inferred, in the biblical story, from the test to determine who the real mother is?

Since the crucial question behind the test is which of the two women do not accept the death of the child, one can infer that this is the criterion for finding the biological mother who loves more her child. Thus, we have:

a) biological mothers love their children above all else

b) The woman who does not renounce to the child in danger to be cut in two does not demonstrate her love for the child

c) Hence, this woman is not the biological mother of the child

In the case of Brecht's story, we will have:

a) Anyone who shows to love a child above all deserves to be their mother, even if they are not their biological mother

b) Grusha prefers to give up the child rather than hurt it, what proves she loves the child above all

c) Grusha deserves to be recognized as the child's mother

We believe that the central question concerns who truly loves the child in dispute. Based on experience and tradition, the Bible presents a foundational premise: that biological mothers love their children above all. From this premise, it is inferred that the biological mother may be recognized because she is the one who immediately renounces her claim to keep the child in order to avoid the possibility of the child's death.

In Brecht's case, the conclusion depends on premise, no longer associated with the truthfulness of what the two women are claiming, but rather with the effective test of love for the child. The premise is not concerned with identifying the biological mother, but with determining who most deserves the role of caregiver. Azdak interprets the dilemma as a question of merit rather than fact and so, he does not apply a primitive test that seeks to prove a fact through symbolic means, but instead employs a value-based test that produces a value- attributing response.

Thus, if the biblical test can lead to false positives – since not all biological mothers love their children –, Azdak's test appears to be more reliable because it involves a direct demonstration of love through the proof the two women undergo, and this test alone is sufficient to certify the major premise – those children should be given to those who truly love them. Therefore, Azdak's test is clear and not based on a weak premise. It modifies the relationship between justice and truth and, in doing this, it destroys – at least in this specific case – the tradition and the conviction that he previously maintained.

3. Conversion of a narrative into a different system, and intertextuality as a creative factor

Having reached this point, it is necessary to ask whether the two previously mentioned arguments have implications for each other, whether they communicate or diverge completely. And especially, whether there is greater justice in the judgement of the *Chalk Circle*, and whether that which can be the object of a judgement of truth is decisive.

At first glance, the two imaginary cases reflect different systems of thought and distinct conceptions of justice, with Azdak's decision appearing more consistent, because it is not based on an easily refutable premise. However, the basis of Azdak's reasoning also presents two difficulties: verifying the veracity of the proof of love, and the lack of an explicit association to the true best interest of the child.

This last issue, which is central to Portuguese law, requires indications and assessment criteria, which, in many cases, must refer to tradition and to scientific

intuitions, in which the biological factor is not to be underestimated. In fact, even neuroscience has recognized that motherhood arouses affection associated with high levels of oxytocin. On the other hand, beyond the extreme cases presented in the two veredicts, how are the tests of love configured? Is it selfless love, protective love or liberating love?

If, in the well-known cases of religious prohibition of blood transfusions, or in the case of religious rituals such as circumcision or even genital mutilation, health risks are accepted in the name of protecting the child and ensuring their integration into the community, why would we accept a negative result in the test of love?

In a case brought before the Constitutional Court, the unaccountable mother, from whom the child was taken and given up for adoption, requested the child's return after her mental health had improved, seeking to remove the child from the adoptive family. To whom should the child be entrusted? Does the proof of love apply in this context? Does biological motherhood matter here?

Cases of this type reveal that what the two judgements obscure is the fact that the fundamental question is, indeed, what the child's true interest will be, and in this sense the two lines of reasoning - Solomon's and Azdak's - show an equivalence both in their outcome and in the decision-making process itself.

Children do not belong neither to their biological parents nor to those who may deserve them (who love them), but should be entrusted to those who can best protect their superior interest. A maxim that must, in certain cases – probably a significant number – take into account biological ties, their living conditions, social and moral development, and the assurance of their autonomy and dignity as human beings.

Understanding the syllogistic inferences of the two judgments reveals a certain original sin in their construction – the perception of children as objects of dispute and property of adults. The intertextuality between the two imaginary narratives allows us to recognize the need for a third narrative.

4. Intertextuality in the relationship between law and justice

While reading the Bible, we find in the text of the *Book of Kings* reminiscences of a social system in which prostitute women probably view motherhood as a profitable position[6]; in Brecht, motherhood also expresses social power. In Brecht's text, there is a quotation from the Bible that serves both as an analogy and a counterpoint to the value of biological motherhood. Brecht's text gains more strength precisely as a counterpoint to the biblical text.

This intertextuality remains as long as both texts are citable and continue to guide us in the search for a logic behind the decision-making reasoning. They reveal an argumentative structure that struggle to articulate the relationship between truth and justice. Underlying the scriptural text lies a discriminatory system and barriers

[6] Ashe (1991), *op.cit*., p. 85

to women's access to justice, while Brecht's text translates an apology of merit, for those in charge of production (the land for those who work it). As Brecht writes: «Children to motherly women that they may thrive. Wagons to good drivers that they may be well driven. And the valley to those who water it, that it may bear fruit»[7].

The comparison between the two texts, and the interference of the biblical text on Brecht's reveals how the relationship between truth and justice is conditioned by questions of ultimate meaning and the basis of the values they presuppose. The intertextual comparison suggests that alternative premises can be inferred in both texts, but these cannot be rendered one into the other. To some extent, they represent incompatible systems, both based, however, on premises that are not fully justified and based on themselves. Yet, the richness of the comparison, lies in showing that none of the premises underlying each story of justice is entirely satisfactory or well-founded. Both conceal the idea that contemporary legal systems attempt to formulate the true interest of children as a foundational "topos". Even Brecht limits his justice framework by suggesting that children "belong to..." rather than treating them as autonomous individuals who are the true subjects of justice.

The comparison of texts from two distinct literary traditions has profound implications for the conceptions of justice in law, showing both the possibility and the necessity of creating alternatives to the premises intuitively drawn from such cases. The implicit text within family courts decisions – specially in legal systems based in fundamental rights derived from the equal dignity of the human person – unfolds another series of arguments and successive justifications, in which the notion of the child's true interest is also intertextually tied to traditions and preconceptions that deserve to be critically deconstructed.

It is always necessary to uncover or reconstruct the hidden premises between the legal text and the judgment — just as was done with Solomon or Azdak. It is within these premises that the key to the validity of our judgments resides. Ultimately, children should be entrusted to whom enables them be free and happy! Addressing, of course, the Neverland if Peter Pan?!

5. Summary. Some conclusions on the possibilities of deconstructing intuitive logic when rendering justice and its contribution to overcoming the limits of the algorithmisation of justice

Comparing texts and interpenetrating narratives through a kind of algorithmic reasoning opens up new ways of thinking about justice. Solomon's test of justice relies on tradition:

- The real mother never accepts the death of the child and will prefer to give her child away

[7] Brecht (1944)

- Tradition is based on experience and on a wealth of other similar cases falling within human intuition of the average person, and Solomon represents an average figure within law discourse

So, if Artificial Intelligence (AI) could formulate a premise for a Solomon-style test, it would likely conclude that the woman who gives up her child would probably be the mother. Otherwise, when confronting Solomon's story with *The Caucasian Chalk Circle*, using AI, we will come to conclude that we have a false positive because the test, in this case, does not reveal the real mother. In Brecht's imaginary version, it is the poor servant—not the biological mother—who avoids the child's death, and if we interpret the test as identifying her as the mother, the logic fails.

Some questions remain regarding the kind of information used by AI:

- Are numerous similar cases sufficient to produce the correct answer?
- Is there an inevitable human bias? Can false positives be avoided?
- Is judge Azdak's justice a translation of the biblical text into another ideological system?

As a matter of fact, we encounter a false positive within the biblical framework. But, does *The Caucasian Chalk Circle* follow the same pattern as in the case of Solomon? Is it the same story? Can the biblical text be translated into another ideological system?

Brecht obtained a just decision through a human judge, Azdak, a drunk and corrupt man. We only misinterpret the translation of Solomon's judgment when we fail to understand the rationality or the algorithm used by Azdak.

As demonstrated, a translation is possible, as long as there is a correspondence between the two worlds.

Let us look once more at Solomon's algorithm:

- The children belong to their mothers. Who is the mother?
- The average mothers love their children
- The real mother gives up her child to prevent dead in the test
- Therefore, the child should be given to the woman who gives up, as only she truly loves the child
- This woman is the real mother

Let us now look at Azdak's algorithm:

- Who is the mother? (objective truth question)
- Average mothers love their children
- The woman who loves the child is not always the biological mother. Here, Azdak knows that this particular woman is not
- Children belong to the person who loves and protects them

In conclusion, the question of truth is not important here. Instead, Azdak discovers the fundamental question: to whom should the child be given?

We come to this conclusion trough an intertextual approach between the two stories, both revealing deeper insights into truth and justice.

A. The question of truth - Both the Bible and Brecht have address the same factual issue; who is the mother? The objective answer depends on the question of factual truth.

B. The question of justice - Brecht decides the question of justice based on the love for the child, an issue independent of biological motherhood.

In conclusion, the two narratives show the alternatives:

a. For Quine (1969), the impossibility of translation depends on the void of ontology
b. Yet, this does not imply the impossibility of clear ideas about what justice is
c. The two stories reveal a different relationship between truth and justice
d. Can law be a territory of alternatives? Which is the best justice?
e. The solution lies in choosing between the importance of tradition and the value of love
f. Comparing the logic of the biblical story with Brecht's narrative, we discover the possibility of another criterion
g. Why is Azdak's answer the best?

Brecht would say:

> «Children to motherly women that they may thrive.
> Wagons to good drivers that they may be well driven.
> And the valley to those who water it, that it may bear fruit.»

The Bible presents a closed system with no definitive answer, only a false positive. Solomon's logic, when applied to Brecht's story, would necessarily become incongruous. The question of truth remains unsolved. If the judge hands the boy to the woman who loves him, he does make an error of logic. Justice and truth do not align.

However, Brecht´s system has also a problem. It presupposes that one can deserve a child. Brecht´s System may be problematic because:

- The child´s will is not considered
- It is not important whom the child loves
- The judgement it is based upon interest and not upon autonomy

We have to finalise the story through Law. Law offers the framework to choose criteria, to evaluate the tradition, to evaluate the protection of the interest and to uphold

the child´s autonomy. Law offers an open system of value assessment. We must teach AI in order to understand this system. Law is the possible system for choosing new values and new criteria.

«*Then the king answered and said: "Give her the living child, and in no wise slay it: she is the mother thereof*»[8]

[8] 1 Kings 3: 27

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Phantasia in Aristotle: The embodied nature of imagination

Phantasia chez Aristote : la nature incarnée de l'imagination.

Sâmara Araújo Costa

Abstract:
This text explores Aristotle's concept of *phantasia*, or imagination, as a distinct cognitive faculty that mediates between perception and thought. Unlike perception, which is always tied to the immediate presence of sensory objects and is inherently true, *phantasia* allows for the voluntary creation of mental images that can be false or imagined. Imagination is closely linked to memory, desire, and motivation, playing a crucial role in anticipating pleasure and pain, thereby driving animal movement and human action. Aristotle's analysis reveals imagination as an active and flexible faculty that bridges sensory experience and thought, highlighting its importance in embodied cognition.

Keywords: *Aristotle, Phantasia, Perception, Thought, Desire.*

Résumé :
Ce texte explore le concept aristotélicien de *phantasia*, ou imagination, comme une faculté cognitive distincte qui assure la médiation entre la perception et la pensée. Contrairement à la perception, toujours liée à la présence immédiate des objets sensibles et intrinsèquement vraie, la *phantasia* permet la création volontaire d'images mentales qui peuvent être fausses ou imaginées. L'imagination est étroitement liée à la mémoire, au désir et à la motivation, jouant un rôle crucial dans l'anticipation du plaisir et de la douleur, et orientant ainsi le mouvement animal et l'action

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humaine. L'analyse d'Aristote révèle l'imagination comme une faculté active et flexible qui fait le pont entre l'expérience sensible et la pensée, soulignant son importance dans la cognition incarnée.

Mots-clés : Aristote, *Phantasia*, Perception, Pensée, Désir.

Introduction

Aristotle's concept of *phantasia* occupies a crucial intermediary position between sensory perception and thought, playing a fundamental role in the functioning of the *psyche*. Unlike perception, which requires the immediate presence of sensible objects and is always true, to subject of perceive, and unlike thought, which necessarily involves distinguishing truth from falsehood, *phantasia* refers to the mental capacity to generate sensory images even in the absence of the actual physical object, such as in dreams or memories, or in perception. Traditional interpretations often reduce *phantasia* to a purely representational function associated with memory and mental imagery. However, recent studies suggest that Aristotle viewed imagination as an active and embodied faculty, essential for cognition and decision-making.

Aristotle emphasizes that imagination is not a form of knowledge because its images can be either true or false. Nevertheless, it plays an active role in cognition by enabling the individual to anticipate sensory experiences, prepare for action, and reinforce memory. In contrast to belief, which involves involuntary acceptance of truth or falsity, *phantasia* depends on the will, allowing one to deliberately engage in mental imagery. Moreover, imagination is multisensory—not limited to vision alone—as evidenced by the vivid auditory experiences one can have when imagining a song.

Another key aspect of *phantasia* is its deep connection with desire and motivation. Aristotle argues that animal movement, especially in humans, is not merely the result of nutrition or reproduction but is primarily driven by desire, which is intimately linked to imagination. Desire arises in response to images created by *phantasia* that anticipate pleasure or pain, thereby directing the body toward action. This relationship demonstrates how imagination functions integrally within the soul as a system, where perception, imagination, desire, and thought continuously interact to produce intentional behavior.

Thus, *phantasia* is not merely a passive repository of images or an accessory function, but rather an active cognitive faculty that supports and coordinates the other functions of the *psyche*, as perception, thought, desire and others. It broadens the scope of experience and enables the complexity of human psychic life. This analysis aims to explore this activity in depth, clarifying its essential features, its relationship with perception and thought, and its significance for movement and action motivated by desire, according to Aristotle's philosophy.

1.1 Imagination – *Phantasia*

This work investigates the notion of imagination in two works by Aristotle, focusing mainly on *De Anima* (Book III) and some books of *Parva Naturalia*. The initial focus is on Aristotle's conception of *phantasia* in *De Anima*, which aims to define the *psyche* by its parts. Aristotle explains that the images generated by *phantasia* are similar to sensations but lack their matter (*De An*. 432a9), and that perception involves receiving sensible forms without their matter (*De An.* 424a19), whereas affections are forms that exist in perception and are movements of the *psyche* (*De An*. 403a25).

Phantasmata (images) resemble sensations and represent the capacity of *phantasia* to generate mental images. The term *phantasma* refers broadly to all mental images affecting us, not only visual but sensory in general. Many scholars argue that *phantasia* is not a faculty separate from perception, just as memory is a function of perception rather than a distinct faculty (*De Mem*, 451a17).

Perception is an alteration or affection involving the reception of forms without matter; these forms encompass all aspects of sensibility. *Phantasia* deals with images or forms that remain in sensibility, such as the image of a sensation, and differs from assertion or denial, since imagination can involve either truth or falsity. (*De An*. 432a9-10).

Stephen Everson (1997) highlights *phantasia*'s intermediate position between perception and thought, involved both in image-creation for thought and sensory reception. Christopher Shields (2016) explains that Aristotle provides two descriptions of imagination: functionally as the capacity producing images, distinct from perception, belief, and reason; and causally as a motion caused by actual perception.

Phantasia also addresses absence in perception and from *De Anima* Book III onwards is seen as distinct from thought and perception. Claudia Baracchi (2014) notes that all faculties of the *psyche* involve *phantasia*, which is a dynamic, ongoing movement transforming present circumstances into potential possibilities (BARACCHI, 2014, p. 115). Baracchi emphasizes *phantasia*'s nature as movement and activity.

Michael V. Wedin (1988) interprets *phantasia* not as an independent faculty but a cognitive capacity that supports other faculties. Wedin notes that imagination lacks commitment to truth or falsity, unlike belief, which involves truth claims (WEDIN, 1988, p. 76). Imagination functions representationally, producing images interpreted as forms or representational structures (WEDIN, 1988, p. 68). Thomas K. Johansen (2012) similarly presents *phantasia* as a representational capacity susceptible to error, enabling retention and modification of perceptual content and desire for absent goods, but lacking direct causal links to external reality (JOHANSEN, 2012, p. 212).

Finally, *phantasia* is a movement caused by active perception and is part of the *psyche* alongside perception, thought, desire, and memory — which, like *phantasia*, operates in co-activity with perception. *Phantasia* is an activity that participates in and links other faculties, operating on images resembling perceptual sensations.

1.2 *Phantasia* as a Cognitive Ability

Thomas K. Johansen (2012), in *The Powers of Aristotle's Soul*, examines Aristotle's conception of *phantasia*, noting that the common translation of *phantasia* as "imagination" is often contested because we tend to associate imagination solely with visual images. However, Johansen shows that in the Aristotelian text, *phantasia* should be understood as a cognitive capacity involving all the sense organs. The text sometimes presents *phantasia* as a capacity, but this is only one interpretive possibility. Depending on the reading of certain key clauses, *phantasia* could be understood either as a capacity or state not linked to truth, or alternatively, not as a capacity or state at all (JOHANSEN, 2012, p. 200).

For Aristotle, *phantasia* is not limited to visual images. The forms referenced are images that resemble sensations. Aristotle consistently refers to the sensible organs and their particular sensibilities, individuating the form of each sense. Receiving a form without its matter goes beyond sight to encompass all sensory activities, such as hearing a sound or distinguishing an odor—these are forms received without their matter. The senses, or sensibility, are thus the potency for such activities. Aristotle writes that "*images are just as perceptions are, except without matter*" (*De An.* 432a9). As a capacity of the *psyche*, *phantasia* is an activity, a movement, or affection of mental images (*phantasmata*) similar to sensible forms or sensations.

Johansen (2012) outlines three points that distinguish *phantasia* from perception and thought, if it is to be understood as a distinct capacity:

1. *Phantasia* is a change (*kinesis*), like perception, and seems to vary in accordance with perceptual changes (i.e., the activity of perception). Johansen argues that imagination is not simply the ability or activity to imagine, since if it were merely the result of perception, this hypothesis would be excluded. He suggests that *phantasia* is an activity consequent to perception (not an additional capacity), writing that Aristotle's emphasis on *phantasia* "*happening to perceivers suggests that phantasia is something that happens to us by virtue of our perceptual capacity, further to the activity of perception*" (JOHANSEN, 2012, p. 202).
2. *Phantasia* shares the same objects as perception. Johansen points out that capacities would differ only if they had different objects. The intellect (thought) is distinguished from perception because it deals with perceptual objects abstractly, but *phantasia* could be concerned with perceptible objects not as perceptible per se, but as "imaginable" (JOHANSEN, 2012, p. 202). The analogy between intelligible forms (in intellect) and perceptual forms (in perception) is misleading: "*We do not perceive this box as perfectly square, but this is how the mathematician thinks of it. In contrast, Aristotle consistently stresses the similarity in content between perception and phantasia*" (JOHANSEN, 2012, p. 202). Aristotle's assertion that perceived

forms remain in the sense organs (*De An.* 425b23-25) supports the causal relationship between perception and *phantasia*. Johansen elaborates that in *De Memoria* and *On Dreams*, *phantasia* functions with the forms received in perception, reinforcing the idea that *phantasia* is a function of perception rather than a separate capacity. He questions whether *phantasia* belongs to perception, especially since memory also utilizes *phantasmata*—images that remain after perception (*De Mem.* 450a30). Perception is always current and in flux, while *phantasia* retains perceptual content without representing it as present. *Phantasia* might deal with images of the past, present, and possibly the future. Thus, *phantasia* belongs to perception by sharing its content, without being reducible to perception.

3. Johansen states that *phantasia* does not act as an efficient cause like perception: *"Phantasia is presented purely as an effect with active perception as its efficient cause"* (JOHANSEN, 2012, p. 204).

Johansen's defense aligns closely with Aristotelian passages such as: "*Now, whether the imaginative faculty of the soul be identical with, or different from, the faculty of sense-perception, in either case the thing does not occur without our seeing or perceiving something*" (*On Dreams*, 458b30). Perception is the efficient cause for all capacities of the *psyche*. However, imagination is distinct from perception because it can generate sensations (*phantasmata*) from absent objects and created images. Thus, imagination deals with both presence and absence, which differentiates it from perception. Imagination depends on will or desire, and can function without actual sensory input, as in dreams, whereas perception is always active (*De An.* 428a5-9).

The senses are actual, but imagination deals with sensory activity both in actuality and potentiality, such as in dreams. Johansen explains that *phantasia* is generally the representation of sensory contents that are not immediately given in the environment, where "not immediately given" is relative to the perceiver (JOHANSEN, 2012, p. 209). In dreams, *phantasia* acts on sensible objects only for the dreamer. Imagination and sense-perception share the same faculty but differ in nature: imagination is sensory activity without sensory input (dreaming). Therefore, dreaming is an imaginative activity of the sensory faculty (*On Dreams*, 459a15-459a22). Since *phantasia* deals with perceptual objects not "immediately given," an object may be physically present but not perceived due to conditions like darkness or inattention, causing it to only "appear" through a different kind of mental motion (JOHANSEN, 2012, p. 209). Thus, *phantasia* occupies itself with absent objects or objects not currently actualized by perception.

Johansen's thesis implies a representationalist theory: *phantasma* represents perceptual images, modified in dreams or according to will when awake. Aristotle suggests perception corresponds to truth, while imagination deals more with falsehood, as imagination does not replicate images of directly perceived objects but

modifies them. This accounts for why *phantasia* often deals with the false. *Phantasia* can present images unrelated to current reality, as in dreams or memories. Remembering involves using past *phantasmata* as representations, which is not automatic. In dreams, sensory stimuli (e.g., dripping water) may cause images (e.g., waterfall) that resemble but are not identical to the stimulus (JOHANSEN, 2012, pp. 209-10).

In dreams, imagination is influenced by current perception and the environment. *Phantasia* creates images and forms of present or absent objects and functions as a representational cognitive capacity. Like memory, it participates in perception across contexts such as dreaming and thought. Johansen explains that *phantasia* originates from perception but can occur without sensory input; its content may resemble past perceptions but need not represent present reality. Once formed, a *phantasma* can be voluntarily recalled or activated in dreaming, remembering, or fantasizing (JOHANSEN, 2012, p. 210).

Perception, *phantasia*, memory, and thought are interconnected. Importantly, thought and memory depend on perception and *phantasia*. Aristotle's theory holds that all animals perceive, imagine, and think (though not discursively).

1.3 *Phantasia* – Embodied Imagination

The mind-body problem in Aristotelian theory is challenged, all the faculties of the *psyche* are actualized by the material, perceptive, and potential capacities of a natural body, which is formal substance in its processes and purposes. The Aristotelian theory of the *psyche*, when confronting the Platonic dualism, in which it presents the intellect or ability to think separately from the others, even the *psyche* can be separated from the material body. For Aristotle there is no separation between *psyche* and body with life, a body without life is a body by homonymy, so the author defended *psyche* as a principle of all living beings, *psyche* as a formal substance of beings with potency for life. And if the *psyche* does not exist apart from a natural body with life, Aristotle inquired that perhaps it could be separated from the body (the *psyche*) only if it had some affection that seemed to it exclusive, and argued that this was not the case. Like other philosophers, such as Descartes, who understood the nature of thought as a type of affection exclusive to the *psyche* (something that meant being purely mental, and then had to unify through the pineal gland, which is still corporeal and physical). There are still those today who understand the mind, or the ability to conceptualize with amodal and separate characteristics[1], which would be something akin to defending thought as an exclusive affection[2] of the *psyche*. On the other hand, for Aristotle, if in order to think one must imagine, and if imagining is linked to perceiving, then even thought must be an embodied capacity, my point here is that there is nothing in Aristotle's theory of the *psyche* that is not embodied

[1] See Machery, E. (2016). The amodal brain and the offloading hypothesis. *Psychonomic Bulletin & Review*, 23, 1090–5.

[2] *De An.* 417a15

in perception, such as the perceptive faculty shared by all animals. If imagining is similar to thinking, if thinking is not possible without imagination, then they are both dependent on perception:

> It seems that in most cases the soul neither is affected nor acts without the body, as, for instance, with being angry or confident or appetitive, or, generally, with perceiving; reasoning, however, would seem most of all to be peculiar to it, but if this is a sort of imagination, or not without imagination, it would not be possible for even this to be without the body. If, then, some one of the functions or affections of IO the soul is peculiar to it, it would be possible for the soul to be separated; but if there is nothing peculiar to it, it would not be separable. (*De An.* 403a5-10)

There is no animal *psyche* that is not a natural body that moves by affecting and being affected, and if it is thinking that characterizes it, the human animal does not separate it from the perceptive faculties either, and so even thought in the Aristotelian theory of the *psyche* is also a kind of embodied capacity. We are aware that Aristotle did not privilege any organ to locate the *psyche*, the notion of organism brings the idea of inseparability of the parts in relation to the whole.

Aristotle does not consider that the *psyche* or soul does not present any capacity that is not embodied, not even thought. And as it seems that there is no privilege of the brain as the exclusive part of thought, the brain was the coldest part of the body, the heart warming the blood and circulating the blood. Aristotle makes use of explanations at a very basic level about the functions of organs, and it cannot be said that they are also mere abstractions, as they make some sense. But about distinguishing what is a kind of embodied knowledge and discursive thinking, what human animals share, thinking or reasoning in general, Aristotle also says other animals participate. Formal causes are a type of explanation of motion as it includes final causes, as Aristotle wrote, the *psyche* of the eye would be its vision. Sensitivity is in all the organs and the whole natural body, as well as all the capacities and powers of the *psyche* as well. Moreover, *phantasia* can be the point of connection between thought and perception, as we saw in the Aristotelian argument, if in order to think one must imagine, and imagining is a capacity activated by perception, so all capacities are interconnected. The challenge is to try to describe verbs such as imagine, or notions such as imagination, which involve the combination of the sensible forms that remain in perception and about the nature of the representation of such mental, or rather sensory, images.

Aristotle posed the question of whether we could locate the *psyche* in some part of the body, or whether we could continue to live without some parts of the body.

Here's why perhaps some researchers understand that the problem for Aristotle was more about the problem of identity, *psyche*, and the natural body. If by chance the *psyche* could be in some specific and exclusive part of the body, but if all parts of the natural body exhibit sentience, they also exhibit imagination and desire.

As Prof. Johansen (2012) explained, imagination cannot be understood as a faculty independent of perception. On the other hand, it is clear that there can be no cognitive capacity that is separate from sensibility or perception, not even thought. But there is another passage in the Aristotelian text which seems to suggest that the *nous* is an exclusive capacity of the human *psyche*, or essential part, just as it is the nutritive part for plants, and perceptive part for animals. Which would be related to the notion of rationality. But probably many researchers have resorted to this passage in the Aristotelian interpretation, to assume that the intellect can perhaps be separated, (but perhaps as a kind of understanding, or rationality), on the other hand it seems to refer to something else that would be eternal, which even see in us the question we are dealing with of knowledge being eternal and separate. something like Hegel's absolute, the realm of Frege's thoughts, or perhaps even what has been presented by Artificial Intelligence. And this passage about the faculty of theoretical knowledge as something separate from the tangible, and therefore eternal, but this perhaps refers to knowledge as the result of discursive thought, because the other parts of the *psyche* would not be separable from the body.

But there is no affirmation, on the other hand the attempt at understanding, and if there is anything that could be separated it would be understanding, or thought, such a capacity to abstract (*nous)* it refers to the separability of what would be our human capacity to understand, in addition to perceiving. As Cohoe (2022) explains, the *Nous* It is a capacity that is separate to the extent that it distinguishes us from other animals that also perceive. And perhaps the difference also comes from the fact that we develop a kind of ability to deal with images in a way that is different from other animals.

Our ability to imagine, that is, to know the form of beings, the investigation of what things are, that is, in an essentialist view of knowledge, this is how Cohoe understands the power of human thought. This also understood Husserl about phenomenology as descriptions of essences. But it is our imagination in that way a different imaginative capacity from that of other animals, and here the distinction seems to be crucial the role of the *nous*, as a capacity to understand, but not separate from perception.

If in order to think one must imagine, and if imagination is incorporated, then thought must also be. The images generated by *phantasia* and the knowledge of sensible forms that are received throughout our sensory apparatus. Hence the conception of *phantasma,* or image, is better understood as the impressions of printed forms, that is, which still remain in our organs: *"even when the objects of sense have gone*

away, perceptions and imaginings remain in the sensory organs." (*De An.* 425b25) This highlights that thought, even at its most abstract, is never fully detached from the body or from lived experience. Imagination serves as the bridge through which perception informs cognition, ensuring that all intellectual activity remains grounded in the sensory and corporeal capacities of the organism. In this sense, Aristotle anticipates a perspective similar to that later developed by phenomenologists like Merleau-Ponty, for whom consciousness and imagination are always embodied: our ability to think, reason, or conceptualize is inseparable from the body that perceives and interacts with the world. Therefore, *phantasia* is not merely a preparatory or subsidiary faculty; it is a fundamental, embodied component of cognition, revealing that even the loftiest reaches of human thought emerge from and remain connected to our sensory and bodily experience.

1.4 *Phantasia* vs Thinking and Perception

Aristotle clearly distinguishes imagination (*phantasia*) from both perception and thought, emphasizing their interrelations but also their fundamental differences. He writes: "*For imagination is different from both perception and reasoning, and it does not come about without perception, and without this there is no conceiving*" (*De An.* 427b15). This points to imagination's dependence on perception as a necessary condition, while also affirming that imagination is a distinct faculty.

If perception involves the forms implicated in matter — that is, the sensible objects as they are directly encountered — *phantasia* is the activity of reenacting these forms, which remain impressed upon the sensory organs even when the immediate stimuli are absent. Thus, *phantasia* is both a capacity and a form of affection, If every movement of the soul is an affection, then imagination is also a mode of being affected. Importantly, this faculty depends on our will; we can voluntarily attempt to recall or recreate these sensory images, that's why is a movement or activity, which connects imagination closely with memory and the ability to be affected again by forms. If in order to think one must imagine, and if imagination is incorporated, then thought must also be embodied. The images generated by *phantasia* and the knowledge of sensible forms received through our sensory apparatus demonstrate that even when the objects of sense are no longer present, perceptions and imaginings remain in the sensory organs (*De An.* 425b25). As Johansen (2012) emphasizes, *phantasia* "happens" to the perceiving subject, showing that imagination is not an isolated faculty but an alteration of the subject grounded in perception. David Charles (2021) similarly stresses that even rational thought is intimately connected to embodied processes, and Klaus Corcilius (2024) highlights that Aristotle conceives the human intellect as emerging from, rather than existing apart from, the perceptual and bodily capacities of the organism. Together, these perspectives reinforce that imagination is the embodied bridge between perception and thought: cognition, reasoning, and understanding are inseparable from our bodily and sensory engagement with the world.

Aristotle distinguished *phantasia* or imagination of thought and reasoning, first because thinking and reasoning depends on their facticity, and we tend to form opinions about what we believe to be true. On the other hand, *phantasia* it would be an activity that produces images, and that would not be committed, like opinion, to the true and the false, or like knowledge, to the true. Imagination differs from conceiving or believing because it depends on our will—we can choose to imagine something, like creating mental images or using memory techniques. Belief, however, is not voluntary and must be either true or false. When we believe something frightening or bold, we are immediately affected emotionally, but imagining these things is more like seeing them in a picture—less directly affecting us. (*De An.* 427b20-25).

Imagination differs from thought and reasoning in that it depends on our will to create images, whereas in thought there is a composition between the false and the true. Opinion or belief affects perception, and it seems that imagining the creation of images means something like "contemplating something with value." Here Aristotle suggests that our beliefs alter our emotions, images that we may desire or avoid. When we believe in something, it has to be as true, and this can affect us more, unlike the imagination that there could be some kind of suspension and affect us less. *Phantasia* seems to be a capacity that presents greater freedom because it is less linked to facticity, that is, we know that such images that we are imagining, contemplating, abstracting are not true. Which is still a type of affection. And perhaps it presents itself more as a disposition or potency to assist in the formation of beliefs, or even to guide perception in some way. Reasoning is distinct from perceiving, but both imagination and conception seem to be part of it. After defining imagination as the capacity that produces particular images, it's important to clarify whether imagination is itself a capacity or state that allows us to distinguish and make judgments about truth and falsehood. Such faculties include perception, belief, knowledge, and reason. (*De An.* 427b27-428a5).

Aristotle stresses that imagination is a capacity offering greater freedom because it is less tied to actual facticity. We know, when imagining, that the images we create or contemplate do not necessarily correspond to reality, yet this imaginative activity is still a type of affection, a mental state that can influence the formation of beliefs and guide perception. While reasoning is distinct from perceiving, both imagination and conception appear as integral parts of cognitive processes. After defining imagination as the capacity that produces particular images, Aristotle questions whether imagination itself is a capacity or state that allows us to distinguish and judge truth and falsehood—faculties that include perception, belief, knowledge, and reason (*De An.* 427b27-428a5).

Phantasia deals with the forms that remain in perception, even without the immediate presence of specific sensory stimuli, and is a kind of movement actualized by perception. Perception requires the presence of sensibles in exercise, whereas imagination can function without current sensory input, as in dreams or recollec-

tions. While animals possess imagination to varying degrees—excluding, for example, some insects that show no behavioral change—perception is always true according to Aristotle, whereas imagination frequently involves false images (*De An.* 428a9-15). This is because we actively combine and create images in imagination, producing representations that may not correspond to reality.

Imagination is thus not perception; if it were, all animals would have imagination, which they do not. Perceptions are always true, but imaginings are mostly false. Clear perception requires that we do not doubt the reality of what we perceive, but imagination lacks this certainty. Visual images may even appear when our eyes are closed, underscoring imagination's independence from immediate sensory input.

Unlike perception, which is always true, imagination entertains falsity, and thought can be either true or false. Opinion and knowledge require belief in truth, but imagination operates in the realm of possibility and potentiality, not committed to truth values (*De An.* 428a16). Thinking and reasoning engage with both truth and falsity; imagination is a kind of thought about perception but not itself a belief. Aristotle differentiates imagination from belief by noting that belief concerns specific objects of perception, whereas imagination involves creating images that may not correspond directly to perceived objects (*De An.* 428a25-428b).

Johansen (2012) highlights Aristotle's insistence on distinguishing *phantasia* from both perception and knowledge, arguing that *phantasia* often involves error and is not a form of knowledge, which must always be true. Belief (*doxa*) can contradict appearances, such as the example of the sun appearing only a foot wide despite being much larger, showing the complex relationship between perception, opinion, and belief (JOHANSEN, 2012, p. 200).

Phantasia is thus a capacity that abstracts from direct perception, producing images that are akin to sensations but without the physical matter. This aligns it closely with memory, which also deals with images or affections of sensory forms, situating perception as primary among the faculties of the soul. Without perception, no alteration or reception of forms is possible, making imagination akin to perception in capacity but distinct in function (*De An.* 432a5). *Phantasia* encompasses all senses, not just vision, and is broader than the common notion of imagination as visual imagery. Dennett (1991) similarly argues that mental imagery is multisensory; for instance, imagining a song is a vivid auditory experience, illustrating the rich sensory modalities of imagination beyond mere visual pictures (DENNETT, 1991, p. 58).

For Aristotle, the images created by *phantasia* are like sensations but without matter, enabling us to abstract from the sensible to the intelligible. Memory, *phantasia*, and thought collectively allow us to transcend immediate sensory perception and contemplate forms without their material substrate. While imagination seems common to many animals, discursive thought and conviction, which require persuasion and reason, are uniquely human. Therefore, imagination cannot be equated with belief, as belief involves conviction and rational assent (*De An.* 428a20-25).

Discursive thinking, a hallmark of human rationality, coexists with perception, but they are distinct faculties. Moss (2012) notes that discursive thinking characterizes humans as rational and social animals capable of opinion and knowledge. Understanding the *psyche*'s capacities requires recognizing how they function and differ. Imagination assists both perception and thought, anticipating them by allowing us to consider possibilities beyond immediate experience. For example, perceiving an unnatural hair color may invoke imaginative judgment to assess its artificiality.

Aristotle insists imagination is not opinion; it is similar to sensation but distinct from opinion generated by sensation. While opinion concerns true or false, imagination deals with possibility and potentiality, not constrained by truth values. Philosophers before Aristotle, such as Empedocles and Homer, conflated understanding and perception, assuming reasoning was corporeal, yet Aristotle emphasizes that perception and understanding differ fundamentally, with reasoning capable of error and unique to rational beings (*De An.* 427a17-427b14).

Perception is always true and shared by all animals, whereas reasoning can be false and is exclusive to beings with reason. Imagination, distinct from both, depends on perception but is not always active and is absent in some animals. It is a movement or affection that occurs only with actual perception, linked to the principal sense of sight, from which the term *phantasia* derives (*De An.* 429a5).

In summary, imagination is a capacity distinct from perception and thought, dependent on perception but characterized by freedom from strict truth conditions. It is an essential bridge connecting sensory experience with cognitive functions such as memory and reasoning, facilitating human thought by enabling mental imagery that is vivid, multisensory, and flexible.

1.5 *Phantasia* and Desire

Imagination correlates with sensitivity and desire, if one can feel possibly there is also desire. This is because desire moves animals, occupying a teleological role for action in Aristotle's theory. Especially when referring to animals that have touch, that need to look for their own food, Aristotle emphasizes the importance of desire for the performance of basic activities for the survival of the animal. Even when the author points out that "*For the sensory organ is in each case receptive of the object of perception without its matter; and for this reason, even when the objects of sense have gone away, perceptions and imaginings remain in the sensory organs."* (*De An.* 425b25) In short, we need imagination to perceive and act.

Desire or will is not a type of affection that could be considered a mental behavior, on the other hand the one who perceives and has appetite also has desire, for Aristotle. Animals that perceive and clearly possess the sensitivity to choose what can cause pleasure or pain, possess will, and so we can assume that they possess desires. The perception of animals is linked to a theory of desire to explain their movements, as he points out "*But if the perceptual faculty, then also the desiderative faculty*".

(*De An.* 414b5) Plants share the nutritive faculty with animals, but not perception, which apprehends and manifests "*appetite is a desire for what is pleasurable."* (*De An.* 414b5)

For Aristotle, what moves an animal spatially is not simply the nutritive or reproductive faculty, for what moves it *"for the sake of something, and occurs along with imagination and desire; for nothing is moved, other than by force, which is not desiring or fleeing something." (De An.* 432b15*)* And also to explain the movements of human animals that are moved by desires, wills, appetites, even when they may be acting acratically.

That said, we can recognize that for Aristotle the teleological causes for human action are desire and practical thought, "*In any case, these two appear to initiate motion: desire and reason-if one were to posit imagination as a sort of reasoning." (De An.* 433a9-10*)* and here Aristotle suggests that some are inclined to be guided by their imaginations.

The causes for human movement would be for Aristotle desire and a kind of practical thinking. On the other hand, not all animals have thought and reasoning. Practical thinking also seems to imply some kind of reasoning, which has as its view a specific end, the object of desire. However, the author points out: "*For the object of desire initiates motion and because of this thought initiates motion, because its starting point is the object of desire. And whenever imagination initiates motion, it does not do so without desire."* (*De An.* 433a20) The purpose of theoretical thought differs from practical thought, the objects are distinct. Desire also exists with a view to something, the object of desire, which participates as a starting-point for practical thought, and therefore for action. Practical thought moves, because it has as its reference, the object of desire. Consequently, for Aristotle, what moves animals is desire.

In this passage Aristotle seems to suggest that desire and imagination may be right or wrong, for if we move because of the objects of desire, and/or because they appear to be good or because they are good, and it seems that theoretical discourse thought, as the understanding pointed out, tends to be correct, and should be more apt to recognize the value of actions, but that it is desire that moves, which seems more than obvious to us. In view of the problem of akrasia, in which there are contrary desires between reasoning and appetites. And for now, it seems to imply other problems about wanting what is pleasurable, or not, that is, what can be considered good for the one who desires such an object of desire. On the other hand, here we would already enter into questions aimed not only at a theory of cognition, but at ethics and philosophy of action.

For Aristotle, the importance of desire in trying to explain the movement of animals, as well as the purposes of their actions, is clear. We move and act because we desire and have purposes in our actions, the objects of desire. And it seems in Aristotle's theory that desire occupies a crucial role, both as part of basic cognition, and can also be encompassed by a theory of action and even in its ethics. However, in the

de Motu Animalium[3] Such a fundamental passage that teleology for the explanation of action can be reduced to thought and desire: "*we see that the movers of the animal are reasoning and phantasm and choice and wish and appetite. And all of these can be reduced to thought and desire.*" (MA 700b15-20)

Aristotle argues that what makes animals move could therefore be recognized as thought and desire, without ignoring that imagination and perception are intertwined. Inclined to deal with the prevalence of desire which for the author can also influence the ability to reason when writing: "*Wish and spiritedness and appetite are all desire, and choice shares both in reasoning and in desire.*"(MA 700b20) The choice of action is to be seen and considered with the starting point not only of desire but also of thought, so such notions are correlated with both perception and imagination, "*the animal moves and progresses in virtue of desire or choice, when some alteration has taken place in accordance with sense-perception or phantasia*." (MA 701a5) Since perceiving and imagining are foundational and incorporated to drive action with purpose, as well as desire and thought. For Aristotle, desire is the first condition.

But thought can also alter perception, and also seems to have a power to lead to the understanding of things and how they affect us, imagination and thought seem to update our understanding of the states of things, or about ourselves, as Aristotle points out.

Aristotle wrote in *De Motum Animalium,* that it is desire that moves animals, and *phantasia* appears as a kind of capacity of anticipation for desire, it is the forms that remain in us that make us then distinguish forms that we desire or avoid, therefore, we distinguish between pleasure and pain. Jessica Moss (2012) goes even further and argues that *phantasia* is the basis of all human motivations.[4] Imagination can also appear as a discriminating capacity, as we saw in the example in which Aristotle expounded on the role of *phantasia* in direct perception, in the example of how we perceive the size of celestial bodies, but the understanding differs from that imagined. Perception is always actual, the activity of *phantasia,* just as perception refers to images, or rather, just as perception is also understood as the capacity to receive forms in perception. If, for Aristotle, imagination also resembles sensations, therefore, it makes sense to agree with Johansen (2012) that *phantasia* is not understood as a faculty separate from the perceptive faculty. In this way, in my opinion, it also results in understanding that none of the capacities function apart from the perceptive faculty, (not even thought) as we can confirm in the Aristotelian text, sensations, like imaginations, remain in the sensory organs, in the sensibility, not only in some specific organ: *"For the sensory organ is in each case receptive of the object of perception without its matter; and for this reason, even when the objects of*

[3] Translated by Martha Nussbaum.

[4] Jessica Moss (2012) Phantasia and Deliberation, In *Aristotle on the Apparent Good. Perception, Phantasia, Thought & Desire*, p. 137: Oxford University Press.

sense have gone away, perceptions and imaginings remain in the sensory organs." (*De An.* 425b25)

Imagination would play an intermediate role between thought and perception, since these two capacities can be considered different activities and faculties (powers) of the *psyche* in Aristotelian theory. Moreover, Aristotle wrote about thinking making use of images (sensible forms), so the conception of *phantasia* is also associated with the images that are necessary for thinking.

For everything that is the object of thought, i.e., intelligible, forms, images, is a kind of abstraction, hence the notion of attached representation, but they are thought of from their sensible forms. So, we see the primary role of perception, whether for thought, imagination, memory, understanding, desire. But as Moss (2012) distinguished, for Aristotle our difference between other animals that also imagine and perceive was at stake.

To identify how the imaginative part of the soul differs from the other parts is a difficult task. Aristotle wrote that if we move, it may be simply by imagining, since this ability acts on desires and our understandings. So, it depends on which one is more inclined, either to reasoning or to desire, but to imagine (*De An.* 433a10). And if imagining is different from thinking, for thinking is a combination of thought (true and false), and if some animals do not reason or think, but imagine and desire: "*whenever imagination initiates motion, it does not do so without desire*" (*De An.* 433a20). Therefore, there is a correlation between what we imagine and what we desire, Aristotle recognized the role of imagination for planning and disposition to action, along with desire. And imagining how a movement seems to depend on our will.

On the other hand, thought, which, when presented as an opinion, may be false or true, differs from perception, which is always true, because it is always actual, the sensation is always of the present. On the other hand, the ability to abstract and create images, that is, to remember or create images that make us anticipate action, as well as thought, is also modified by *phantasia* or imagination. And in addition to this, it also influences perception, *phantasia* can create images that generate affections, we remember forms, and we create sensations from what we think. The activity of thought, perception, and imagination are interconnected and are capable of altering our ability to act.

Perception, on the other hand, could not for Aristotle be easily identified as something rational or irrational, animals would also perceive what can be considered good or bad through the distinction of pleasure and pain, and the notion of rationality, and perhaps the intellectual faculty (understanding) would be exclusive to human animals. Aristotle refers to this as linked to the eternity of science, of knowledge. In addition to trying to distinguish humans from non-human animals, discursive thinking with the power for knowledge would be something exclusive to humans. Imagination is also a faculty that would be difficult to classify, after all, animals in general

have imagination, just as they perceive. If they perceive and possess sensibility, they also desire, and the capacity to desire will be another faculty of the *psyche*, the desiderative as distinguished from perception, imagination, and thought. Aristotle argues that it would be absurd to consider it (desiderative faculty) separate from the other faculties of the *psyche*. Therefore, like perception and *phantasy*, desire is interrelation capacities. If the human *psyche* can be defined by its parts, it doesn't matter how many there are, desire will participate in them all.

The capacity to desire, for Aristotle, was different from the others, but they are not separable. And he stressed that this capacity acts on a rational and irrational part, that is, desire. Jessica Moss (2012) presents the idea of rational desire as a human capacity, but also presents irrational desire as appetite, impulsivity. Finally, if the *psyche* has three parts, Aristotle affirmed that desire is present and acts in each of them. By defining the *psyche* by its parts or faculties, Aristotle argues that there is no discursive thinking in nonhuman animals, but there is imagination. *Phantasia* is a faculty and part of the *psyche* that would also explain the movement of other animals beyond desire.

What moves is the object of desire as the final cause and principle of action, something that was explored by the philosopher Elizabeth Anscombe (1981) in *The Intentionality of Sensation*,[5] wrote about the notion of the "object of desire" as well as the "object of thought".

Ryle, Austin, Anscombe rejects in particular the conception of "sense data" that has been developed by analytic philosophers. We see that this is the attempt of philosophers to deal with the problem of *phantasia*, linked to that of mental images, as we are seeing, is not an easy subject. If images are not like images, as in seeing what I am seeing, but are a type of images, which Anscombe called intentional objects, we understand it as the notion of intentionality as a mark of the mental in Brentano and also as a final cause for action in Aristotelian theory. Such an understanding goes on to deal with the *slogan* of intentionality, but we need to understand what it is to be intentional is.

Dealing with mental images, or ideas, contents (Anscombe takes up Descartes) that the author describes as intentional objects that are like objects of thought or desire. Intentional objects are not particular objects that we find in the world, but the images that we have of them in mind, but if this is the problem, what is the nature of such mental images. But beyond the difficulty of distinguishing the *phantasia* of the other capacities, desire is also a type of theory of intentionality in Aristotelian theory. But it is the object of desire that makes the animals move, the object insofar as it is understood and imagined, and the relation between imagination and desire, as well as thought, is emphasized to explain the movement.

[5] ANSCOMBE, G. E. M. (1981) The Intentionality of Sensation IN *Metaphysics and Philosophy of Mind*. The Collected Philosophical Papers of G. E. M. Anscombe. Vol 2. Basil Blackwell Publisher.

Desire and imagination are faculties of the *psyche* that we share with other animals. And desire as an explanation of the movement of animals is also linked to imagination, because it is the object of desire that makes the animal move.

Conclusion

In conclusion, Aristotle's notion of *phantasia* represents a unique cognitive faculty that, although dependent on perception, differs fundamentally from both perception and thought. Whereas perception is anchored in the actual presence of objects and corresponds to truth, and thought necessarily involves truth and falsehood, imagination enjoys a distinctive freedom, capable of producing images that may be fictitious, combined, or false. This freedom makes *phantasia* an essential bridge for thinking, expanding human capacity to transcend immediate sensory input and contemplate possibilities and abstractions.

Furthermore, Aristotle's analysis reveals that imagination is not a passive function but an active power underpinning key processes such as memory, reasoning, and, notably, desire. Desire, connected with *phantasia*, emerges as the primary driver of animal and human movement, with humans uniquely capable of directing their actions through the anticipation of pleasures or pains imagined. This interplay between desire, imagination, and perception provides an integrated framework for understanding not only cognition but also motivation and action, demonstrating the depth of Aristotle's account of the soul and its faculties.

By reconsidering *phantasia* as a dynamic and embodied process, this paper challenges traditional interpretations of imagination in Aristotle. We argue that *phantasia* is essential for cognition, memory, and action, functioning as a bridge between perception and thought. Understanding this concept contributes to contemporary debates on imagination, cognition, and intentionality.

Aristotle's insights into *phantasia* not only illuminate key aspects of ancient psychology but also resonate with contemporary discussions in cognitive science and philosophy of mind. Recognising the embodied nature of imagination allows for a more integrated account of how the sensible forms or images that remain in the senses sustain the activity of *phantasia*, linking perception to memory, thought, desire. In this way, imagination or *phantasia* is not merely a repository of mental representations but a living process that prolongs sensation, shaping cognition and guiding action.

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Photography and imagination

Henrique Loff Silva

Abstract:
The article is structured from the point of view of a photographer. Through this evocative first-person lens, the author — grounded in what is interpreted as the ontological essence of photography — articulates three primary modes of imagination that various types of photographs may elicit: sensorial, fictional, and material. In a compelling final development, the author introduces an enigmatic form of photography that, rather than stimulating the imagination, serves to block it.

Keywords*: photography, imagination, "That-has-been", fiction, nothingness.*

Resumo:
Este artigo é escrito a partir da perspectiva de um fotógrafo. O autor, numa óptica pessoal e evocativa, com base no que se entende ser a essência ontológica da fotografia, distingue três modos principais de imaginação que diferentes tipos de fotografias podem suscitar — a imaginação sensorial, ficcional e material. Por fim, num movimento contrário particularmente marcante, o autor explora um tipo enigmático de fotografias que, em vez de estimularem a imaginação, a bloqueiam.

Palavras-chave: *fotografia, imaginação, "Isto foi", ficção, nada.*

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Introductory Note

This article arises from the perspective of a photographer. It is grounded in a sustained practice. I do not intend to present an exhaustive account of the relations between photography and imagination, nor do I wish to uphold a specific thesis. Taking concrete photographs as a point of departure, I seek to explain certain imaginative processes that occur in me when I contemplate them, when I look at them with an enchanted gaze. I have chosen images that clearly interest me, in an effort to find in them what can awaken imagination. From these exercises arise certain questions and perplexities that a photographer should note when taking his craft a little more seriously. Perhaps the most demanding — and, at the same time, the most fascinating — task of a photographer consists less in taking photographs than in knowing how to look at them. Which is to say: in knowing how to imagine them.

The Noema of Photography

As a photographer, as a practitioner and collector of photographs, I can hardly avoid the theme of the ontological identity of photography — its fundamental nature, its distinctive particularities. I do not believe I can ignore this theme, especially if I wish to relate it to imagination. André Bazin and Roland Barthes place particular emphasis on this aspect. When I find myself facing a photograph, I am compelled to believe in the existence of the thing represented; I cannot deny that «the thing has been there». «The name of Photography's noema will therefore be: "That-has-been", or again: the Intractable», writes Barthes in the famous passage from his final work, devoted precisely to photography.[1] Indeed, how can one refute that this is the founding order, the metaphysical status of photography? How can one underestimate the importance of this premise? A painting may be more faithful and precise than a photograph, yet it will never have the credibility of photographic proof — the image comes into being differently in each case. A painter may imitate reality without having seen it; a photographer is someone who has necessarily seen the photographed thing (the person, the object, the landscape). I am not, with this, taking a given photograph as an inevitably exact copy of reality, but as a disturbing reverberation of a past fragment that still, mysteriously, glimmers, an «emanation of *past reality*: a *magic*, not an art», as Barthes puts it.[2] I must grant photography a power of authentication that surpasses its power of representation. What photography offers me, irrefutably, is not a presence but the proof of a "presence" of something positioned in space and time, a thing or an event that the photographer witnessed and recorded, even though

[1] «Le nom du noème de la Photographie sera donc: "Ça-a-été", encore: l'Intraitable» (Barthes, R., 1980, *La chambre claire – Note sur la photographie*, p. 120). Naturally, I cannot consider here images created digitally — whether or not through the recent models of "Artificial Intelligence" — nor photographs so extensively manipulated that they lose that necessary and singular connection with their referent.

[2] «émanation du *réel passé*: une *magie*, non un art» (*Ibid*. p. 138).

photography itself cannot guarantee any resemblance to, or veracity about, that photographed thing or event.

In fact, if we go back to the origins of photography — to the five decades preceding the official date of its invention in 1839 — we find, within the scientific and cultural milieu of the Western world, countless testimonies that confirm a very precise desire: the proto-photographers of that time wished to produce images that would inscribe themselves spontaneously on a photosensitive surface.[3] This aspiration is understandable if we consider that, since the Renaissance, the projected image produced by the *camera obscura* (the optical device that was the precursor of the photographic camera) had been known. In this desire — which lies at the root of the initial conception of photography, in the notion that an image could be fixed "spontaneously", without the intervention of the human hand, onto a given surface — there already seems to be implied, we must admit, the very specificity of photography, that which distinguishes it from painting: the fact that, with photography, it is the projected image of the very presence of something that becomes inexorably inscribed ("That-has-been") upon a given physical support.

What remains of photography's essence today, in an age when we are flooded with images every passing minute? What importance does the "That-has-been" still hold? The specificity of that disquiet towards what has been seems to have been replaced by a kind of fascination with the "This-is-now". For my part, I remain held to what has always struck me in photography (perhaps that is why I remain faithful to obsolete photographic processes, never resorting to digital tools).

Whenever the camera clicks, it inevitably captures something. From the object that once stood before the camera radiated rays of light that now reach me — I, who am here, before the image, at another point in space and time. An image in which an unrepeatable event, now irretrievably gone, continues to reverberate. As Barthes says, photography is «literally an emanation of the referent».[4] In some way, the photographed object comes to touch me with its very own rays! The certainty we have in the "That-has-been" is only possible by virtue of the optical and chemical phenomena inherent to the act of photographing (focusing, developing, etc.).

The unique materiality of the photographic image may produce a particular impression. In a certain photograph I see, for instance, a dark forest where at the heart of the lush vegetation there is a blaze of light — a large stone struck by a powerful stream of sunlight. I immediately notice its effects: I feel the stone grow warm, I sense the spread of a mineral warmth running through it. It is almost as if I am allowed to access the interior of matter, as Bachelard would say. I can even experience tactile (the texture of the rock), olfactory (the scent of the forest), and

[3] On this subject, see: Batchen, G., 1997, *Burning with Desire: The Conception of Photography*, p. 180.

[4] «littéralement une émanation du référent» (Barthes, R., 1980, La chambre claire – Note sur la photographie, p. 126).

auditory (the sound of the wind) sensations. And as the rays of light seem to touch me, I cannot resist the temptation to run the pulp of my fingers over the surface of the photographic paper, to feel the slight burn of that white stain.[5] What first astonishes me in one of Edward Weston's celebrated peppers (link in note[6]) is the miracle of the referent's attachment to the photograph (only on a second reading — a "cultural" reading — do I become interested in its sculptural quality). Thanks to this wonder, I have the feeling of drawing closer, through the image, to the very nature of things, as if stepping outside myself in order to sense them inwardly — to, in this case, "taste" what a pepper is.

After all, what kind of experience is this? In my view, it stems from the specificity of photography. But could it take place solely in the sensory domain? Is it not rather an experience that already unfolds in the domain of the imagination? What is at stake here is the difficult realm of phenomenology — which I will not explore.[7] I do recognise, however, that this experience of photography cannot result from the simple reception of images; it is instead the outcome of an active, productive process, capable of generating the new and the unexpected. What I mean is that the "sensations" (tactile, olfactory, auditory) I have just described, this "drawing closer to the nature of things", already result from the very activity of the imagination. They are imaginative acts, something not present in the photograph itself but which, as we have seen, its metaphysical density elicits, or rather, makes possible. The imagination is thus the operator of this passage from the possible to the unreal. It is what allows the real to be subverted, even denied. It is what allows the absent, the non-existent, the absurd, to be experienced.

A matter still to be settled: can imagination liberate us from the constraints of the senses and the dictates of reason?

Through the Image

If I contemplate the photograph of a given mountain landscape, I may so strongly believe in the existence of the thing photographed — such is the reliability with which its radiance convinces me of the reality of that landscape — that I end up being drawn to the extent of space represented in the photograph. I wish to visit, or even inhabit, that domain. I may feel myself transported there, and into the

[5] Would the same happen with painting? When faced with Cézanne's fruit or van Gogh's flowers, what kind of experience unfolds? Painting seems to demand a decoding, a set of intellectual operations; it justifies abstractions, ideas, rather than what we at first take to be sensations.

[6] Ver: https://www.moma.org/collection/works/58496

[7] Sartre presents his theory of imagination in *L'imaginaire* (Sartre, J.-P., 1940, *L'imaginaire – Psychologie phénoménologique de l'imagination*). In this work, we become aware of the difficulties involved in a phenomenological description of the mental image: the difficulty, for example, of describing the subjective evocation of an absent object (the most difficult image to describe); the difficulty of determining, ultimately, what an image is and what kind of consciousness apprehends it; and the difficulty of determining the very structure of the consciousness in which imagination may take place.

surrounding space that is not visible. I may wish to cross into what lies beyond the limits of the frame. I then experience a perfectly acceptable imaginative reverie: I walk along the stony path of that mountain, making my way toward the unknown slope. One might say that, in doing so, I set in motion a specific kind of movement: a movement toward what the frozen image prevents me from seeing — the movement, I am tempted to say, of cinema.

I now turn to a concrete case (I will risk showing a series of my own photographs) (Figure 1). Three photographs depict the same setting: a room in which three slides are projected onto a projection screen. Each projected image corresponds to a photograph.

Figure 1. Henrique Loff Silva, *Three Seas* series, 2007, triptych, pigment ink on paper (79.9 x 60 cm each).

A patient observer will begin by lingering in front of the first photograph (Figure 1, left). In a manner similar to what I have just described, there should arise within him — or so I hope — the desire to visit this space. In this case, however, the observer might feel tempted to "jump" into the image, as Alice did to the other side of the mirror. He will thus enter a first dimension — the room where the slide is projected, where the projector and the screen are located (and he will be in the company of the photographer responsible for that installation). Another leap, and this time he will plunge into the projected image: he enters the next dimension. He is now on the beach (summer holidays), beside a second photographer looking through the viewfinder of his camera, while three children bathe in the sea. He guesses the thoughts of the older girl ("I'm cold, I can see myself cold and shivering in the photograph — quick, take the picture!") and of the girl with the swimming cap ("Look, I can swim!"), and he hears the little boy shouting. Placing himself beside these children, he looks in the direction of the second photographer, as the two girls do, and then another marvel occurs: he leaps to the other side of the lens of his camera and, once again, finds himself in that living-room. If the observer plunges into the lens of the first photographer, he will end up back in the initial position, before the photograph,

in what we all assume to be the real world. Without restraining his imagination, he even admits that the beings who rightfully inhabit that image possess, like many others, the very same power to leap between dimensions. And so the three bathers, chilled to the bone, jump out of the screen, leaving salty wet footprints on the living-room floor, on their way to dry towels.

In the second photograph (Figure 1, centre), the observer may likewise be drawn into it, into the dimensions of space and time that unfold there. He knows that those people are watching the sea. On this side, on the viewer's side of the image, he is unsettled by what he cannot see. As the sea entangles itself in the thoughts of those beings, he swiftly merges with them, as if by metempsychosis. He enters that dimension, infiltrates himself into the being of each member of that group (something catches the attention of the child standing on tiptoe), and he looks at the beach bathed in the orange-violet light of sunset. Finally, in the third photograph (Figure 1, right), the observer may assume that this same group of people has crossed the white wall of the promenade, heading towards the water's edge.

Far too intricate, no doubt, is the kind of imaginative delirium in which this observer might indulge. It is almost a mirror play, potentially infinite. Could it have been triggered by a painting? I do not think so. In my view, all this must stem from the specific nature of photography. Yet it is upon these photographs that the imagination works. Here, once again, imagination must be a productive faculty — irrepressible, undisciplined, almost subversive, and certainly deceptive. These three photographs, I am bound to admit, seem to call for a particular kind of imaginative delirium, a demanding imagination: one that depends on prior training and entails a certain knowledge and a certain set of references — from cinema, from literature...

A Hallucinatory Pathos

Some photographs, all too rare, are not merely interesting: they reveal something that unsettles me, stirring an emotion I can scarcely explain. When I devote myself to looking at them with due attention, the marvellous flows of imagination are set in motion within me.

I revisit one of them (published recently, accompanied not by a critical commentary, but by a fictional text).[8] It is the most beautiful photograph in the world — an anonymous photograph (Figure 2). Six girls, dressed in white, are seated around a table outdoors, apparently celebrating a birthday. At the far end of the table, a smiling boy (from a different social stratum — I can tell by his work clothes — than his angelic friends) holds a large mirror in which is reflected the image of the photographer who captured that moment. A woman photographer, in fact, also dressed in white, leaning over her camera. Thanks to this play of reflections, she was able to include herself in the very image she intended to record.

[8] Loff Silva, H., 2024, "Fala, memória!", in *Osso*, 38, pp. 14-15 (https://www.revistaosso.pt/fala-memoria/).

Why does this image move me so deeply? First, at a glance, I read its historical framework; I place it in a likely period (the first or second quarter of the twentieth century). Then, with closer attention, I try to decipher its signs. Everything awakens my curiosity: why those white dresses with those lace collars? Where was the mirror brought from? From the dining room? Where were those apples and pomegranates picked from? Is there an orchard? Are those decorative ferns arranged around that plate of watermelon slices? Is that an unwrapped birthday cake resting on the pedestal at the centre of the table? And the house? Where might the house be located? Behind a garden? Provence, Italy, southern Spain? I also imagine the lavender scent of all that immaculate whiteness, the mad song of the cicadas, the rosy hue at the end of that day, and its melodic, trembling shadows. I am struck by a hallucinated pathos. I paradoxically, disturbingly, almost painfully associate the certainty of a past that has irretrievably vanished, never to return, with the evidence that this past, through photography, becomes a permanent now, with the conviction that this past still reverberates, is still alive. I recognise that the absolute stillness of the instant (the suspension of time here is almost excessive) coexists with my suspicion that something still seems to be in motion. To the "That-has-been" I add "This-will-unfold-in-time". I know too well that everything in that photograph is dead, and at the same time I sense that everything is going to die, as if photography could crush time. Life and death are thus combined, presence and absence, eternity and transience — of all things and of all those beautiful beings.

The markedly ambivalent nature of the photographic image — something that, in my view, stems from its very essence — lends this photograph an extraordinary power. I am not struck by a single «punctum»; it is not just one detail that draws or wounds me.[9] Perhaps it is the presence of the boy that intrigues and moves me the most. I notice his slightly withdrawn posture (he is holding the mirror), his short hair, the tightly fastened collar, the work overalls, and a smile that is utterly indefinable. And that sunburnt hand of his, resting on the noble frame of the mirror, while all six girls keep theirs hidden in their laps, in that girlish attitude of obedience and good manners... What does that hand say? What can it reveal? Could it be what brings forth the truth of that being, the story of his passage through the world?

The details that touch us are, to a large extent, inexplicable. Yet they often lead us to imagine what lies beyond the photograph — all that it does not show, an entire realm that deserves to be imagined. When a photograph is anonymous, as in this case, it seduces us all the more and invites us to drift into a long reverie. And then there are the details that call up and intertwine with the images stored in memory, with what is most cherished there, with our own obsessions, with the symbols and allegories we have shaped ourselves.

[9] I use here the celebrated concept introduced by Barthes in *La chambre claire* (Barthes, R., 1980, *La chambre claire – Note sur la photographie*, p. 49).

Figure 2. Anonymous photograph (date, printing process, and dimensions unknown).

In the imagination triggered by this photograph, I think we might be able to distinguish a different property. It is a type of imagination less unrestrained, less capable of generating the absurd or the irrational. Everything in this photograph seems to encourage the creation of a coherent world; everything in it seems to establish a logical sequence between things, everything seems to propose a meaning; it seems, after all, to offer the ingredients that could entice a narrator. Consequently, the imagination of such a narrator will have to operate with a certain consistency, while still turning to his own memories, beliefs, and anxieties, as well as resorting to images drawn from cinema, literature, painting, and photography itself. The fictional, epistolary text published alongside this photograph (see note[8]) clearly reflects this — Proustian in tone and richly saturated with literary imagery. As if imagination had shifted into fiction, holding itself back and submitting to a method, a model, a plot. In other words, imagination can help us better understand a photograph: by creating and rehearsing scenarios, by testing our intuitions, and by revealing new fields of meaning.

Will imagination be able to rescue all those wonderful beings from the irreversible nothingness in which they now find themselves?

The Uncertain Photograph

Other photographs give rise to reveries that are far less distressing. Yet because they are staged — at times meticulously so, something perceptible even to the least trained observer — they end up losing a significant part of their pathos. The photographic image ends up losing the virtues that we usually associate with it: its contingent nature and its supposed innocence. This does not prevent us, however, from continuing to believe in the material existence of the thing represented; the "That-has-been" remains inseparable from the image. But now, the referent is permeated by a marked artificiality; it is no longer natural, but consists instead of a *téchne* of staging.

I recall, for instance, the work of Gregory Crewdson (link in note[10]) and of Philip-Lorca diCorcia (link in note[11]). Crewdson orchestrates, down to the smallest detail, genuine cinematic tableaux. Indeed, it is cinema that seems to lend him his imagery, his stagings, his symbols — or, if we will, his codes. He creates enigmatic, uncertain images, avoiding elements that would clearly identify a time or a place. DiCorcia's stagings, on the other hand, recall the poses, masks, and atmosphere of the theatre. Rougher, less elaborate, they present unusual, seemingly casual situations, even though they are carefully planned images. It is well known that this work explores the tension between the factual and the fictional that photography can produce.

In both cases, I am faced with photographs that intrigue me but do not move me. There is in them something unresolved that unsettles me. The polysemic nature of many images, Barthes tells us, is linked «to an uncertainty (to an anxiety) as to the meaning of objects or attitudes. Hence, [...] a certain number of techniques are developed in order to fix the floating chain of signifieds, to combat the terror of uncertain signs».[12] Yes, to some extent I may be inclined to try to fix the meaning of Crewdson's and diCorcia's photographs, to seek a synthesis of their possible meanings. But is that even possible? In fact, no deliberate, too explicit meaning emerges in these images: there seems to be a drift of meaning. Perhaps for this very reason, I fall into a strange complicity with the characters within them, with their gestures devoid of content, without any apparent significance.

I have the feeling that I have been given a still frame (Crewdson), a distant moment from a movie, or a theatre poster (diCorcia), a brief excerpt from a drama. In fact, these fragments are more quotations than mere samples of a whole. Faced with these quotations, I am driven to carry them forward, to devise the "text", to discern, within what is still diffuse, a kind of diegetic outline. But my reading remains sus-

[10] See: https://gagosian.com/artists/gregory-crewdson/

[11] See: https://www.davidzwirner.com/artists/philip-lorca-dicorcia

[12] «à une incertitude (à une inquiétude) sur le sens des objets ou des attitudes. Aussi se développent [...] des techniques diverses destinées à *fixer* la chaîne flottante des signifiés, de façon à combattre la terreur des signes incertains» (Barthes, R., 1982 (1964), "Rhétorique de l'image", in *L'obvie et l'obtus, Essais critiques III*, p. 31).

pended; it never fully comes into focus, allowing me only to engage in a play of correspondences. The sense of uncertainty never fades; everything seems to undermine any diegetic logic. Only counter-narratives unfold — unconnected, discontinuous, incongruous elements — as if all that mattered to me were to "follow" a minor and absurd detail, an apparently superfluous theme, without variations or progressions.

When faced with photographs of this kind, I must then acknowledge that imagination — tempted to create its own images — merges with the process of fiction, unsettling its methods and undermining its attempts to establish a fixed plan. Here, imagination is unresolved, undecided. In most cases, indeed, even in the presence of highly diverse photographs, the images I end up bringing forth are marked by an instability which is inherent to them. They are nebulous, mutable, shifting images; those that gain coherence quickly change or dissipate. And the fictional process, if it occurs at all, is more a chaotic movement than an organised process guided by a structuring axis. It is often an unruliness — something non-hierarchical, always dismantlable, reversible — where a multiplicity of images intersect and ramify.[13]

Would it be possible, in any of these unusual photographs, to uncover — and bring to life — the germ cell of a fiction?

The Dreamed Earth

Other photographs seem to capture a time far too distant. They hold something pure and inaugural, as if an image could exist without relating to prior representations. These are photographs with no apparent past, primitive images whose meaning has been lost within the chain of meanings. In such photographs, metaphors are absent.

One of Francis Frith's extraordinary photographs[14] belongs to this genre of images (Figure 3). A landscape of a primordial territory appears before me, the image of an immensity. «Isn't imagination alone able to enlarge indefinitely the images of immensity?», writes Bachelard.[15] In images of immensity, imagination desires to expand. Immensity seems to be a category of imagination — imagination naturally leans toward greatness, toward an unlimited world. Indeed, imagination amplifies Frith's image. I sense the vastness of the world, the extension of its physical components, the density of its matter. But what strikes me immediately is the powerful presence of the earthy element. And the images that follow from it seem to arise from what is solid, from what is aggregated, from the stability of things and of the creatures it sustains. The enchantment of images of the earth is bound to repose, to inertia, to the pacification of substances. Imagination here is not animated by air or

[13] George Steiner repeatedly emphasizes this point. On this matter, see: Steiner, G., 2005, "Ten (Possible) Reasons for the Sadness of Thought", in *Salmagundi Quarterly of the Humanities*, No. 146-147, pp. 3-32.

[14] See: https://www.metmuseum.org/art/collection/search/260957

[15] «L'imagination, à elle seule, ne peut-elle pas grandir sans limite les images de l'immensité?» (Bachelard, G., 1998 (1957), *La poétique de l'espace*, p. 168).

by fire, by the uncertainty or fervor of aerial or igneous images, nor even by the aqueous element. I dream of the perpetuity, not of the impermanence of things; I dream simultaneously of the distant and the eternal, not of the void or of nothingness. Imagination, however, expands in both directions (there is something ambivalent about it): in the vastness of the earth I dream of visions of what lies within its bodies — the womb of a mountain, the core of a rock, the heart of a tree — and, once inside them, I dream of the immensity of what is intimate to them, of the unlimited resources of their depths.

Figure 3. Francis Frith, *The Written Valley, Sinai*, *ca*. 1857, albumen print (14.9 x 20 cm).

The figure I end up identifying — the man seated beside that large stone with which he seems to merge — appears also to contemplate that landscape. He dreams of the images of the earth, of the vastness of the world, and of the depths of matter; he lets himself be enchanted by their ambiguity, and at once his presence reminds me that, of all faculties, imagination is perhaps the most specifically human.

The imagination awakened in me by Francis Frith's photograph is then the Bachelardian imagination — the material imagination, that is, the imagination that gives life to its material cause, to its elemental sign, the imagination marked by

one of the four elements.[16] Few photographs can give rise to it. Remote places and vast landscapes inspire imagination according to an old law of Romanticism. Yet the inaugural photograph — the one that seems to arise from an archetype — is as rare as a poem that frees itself «from perishable forms, from vain images, from the perpetual change of surfaces».[17] Moreover, just as with every truly powerful verse, the inaugural photograph will produce within us images all the more enchanting and disconcerting the more imagination allows itself to be carried away by a certain ambivalence, by that state in which opposing values ceaselessly compose themselves. In the images of the dreamed earth we shall then recognize the double participation of what is immense and intimate, at rest and in motion, permanent and transitory.

The Terrible Nothingness

I must finally mention certain peculiar photographs that seem to deny the very status of photography. The "That-has-been" is emptied out, ceases to matter, insofar as the photograph was capable only of attesting to the presence of what is inaccessible to us, of an unbearable distance. They are negative images, images whose meanings collapse, images that block imagination. And it is precisely these images that, perhaps, disturb us the most.

Not long ago I came across one of these photographs. When I first saw it — without any caption, without a title (without words seeking to impose meaning upon it), without a date (without the indelible mark of the past), without knowing its author (without the intrusion of rhetoric or morality) — it appeared, in its total inapprehensibility, as the strange apparition of an impenetrable realm: cold, distant, and unattainable. Today, even though I possess all the information that was then lacking, the distance at which it still holds itself has not diminished, nor has its defining indeterminacy faded (see link in note[18]). It resists. It closes its doors to me. It is, by nature, inaccessible, uninhabitable. In this photograph there is no reference (of place or of time) on which I might rely. The objects contained within it — for there is, after all, something enclosed there — belong to the domain of the illusory, to a kind of inconceivable future. I struggle to discern what they are. I know, however, that they

[16] See Bachelard's introductory chapter in *L'eau et les rêves* (Bachelard, G., 1964 (1942), "Imagination et matière", in *L'eau et les rêves – essai sur l'imagination de la Matière*, pp. 1-27). With regard to the dreams of "material intimacy", see the first chapter in *La terre et les rêveries du repos* (Bachelard, G., 1965 (1948), "Les rêveries de l'intimité matérielle", in *La terre et les rêveries du repos – essai sur les images de l'Intimité*, pp. 7-57).

[17] «les formes périssables, les vaines images, le devenir des surfaces» (Bachelard, G., 1964 (1942), *L'eau et les rêves – essai sur l'imagination de la Matière*, p. 2).

[18] See: https://www.moma.org/collection/works/50466. It will not be possible for the reader to engage with the image as I have just described: here one will be faced with the authorship, the title, and the date of the photograph. Although this is the second example I present from Edward Weston, it should be noted that I have no particular interest in the work of this photographer.

are not remains or fragments of our world. They are objects, according to Blanchot's formula, «present in their absence, graspable by being ungraspable», objects that «appear as having disappeared».[19] I must then acknowledge that they are mortal remains — corpses. Yet a corpse escapes common categories.

At this point, let us follow Blanchot's thought. The presence of a corpse, in its strange solitude, is the presence of something that has withdrawn. We are therefore in the presence of the unknown. And, at the moment the corpse appears to us, it resembles only itself. "Itself" points to that impersonal being, distant and inaccessible, which no longer maintains any link with our world. The corpse is then an obscure possibility, a shadow that ultimately appropriates what once existed and transforms it into something inaccessible. The objects that this photograph offers me are therefore corpse-objects: they are the unreachable from which I cannot distance myself; they are what I cannot imagine and therefore what I cannot forget.

On the other hand, the place where a corpse is found is not just any place.

> «What is there [the corpse], with the absolute calm of something that has found its place, does not, however, succeed in being convincingly here. [...] To be precise, this basis lacks, the place is missing, the corpse is not in its place. Where is it? It is not here, and yet it is not anywhere else. Nowhere? But then nowhere is here. The cadaverous presence establishes a relation between here and nowhere. [...] The corpse is here, but here in its turn becomes a corpse: it becomes "here below" in absolute terms, for there is not yet any "above" to be exalted.»[20]

The place where the corpse-objects of this photograph are found is that undifferentiable "nowhere" which, nevertheless, must be situated somewhere. And this is the place of death: a space marked by the most absolute irresolution, a space unreachable, paradoxical, and, for that very reason, imaginable only in its unimaginability. Hence the place these corpse-objects occupy is dragged down, sunk by them, and this dissolution seems to compromise the very possibility of there being a habitable place where I myself might remain.

Edward Weston's photograph, without his ever having realized it, is thus an image that establishes nothing, that shows a terrible nothingness. The indeterminacy of this nothingness clings to my skin, takes up a place within me, precisely because

[19] «la présente dans son absence, la saisissable parce qu'insaisissable, apparaissant en tant que disparue» (Blanchot, M., 1955, "Les deux versions de l'imaginaire", in *L'espace littéraire*, p. 268).

[20] «Ce qui est là, dans le calme absolu de ce qui a trouvé son lieu, ne réalise pourtant pas la vérité d'être pleinement ici. […] Justement, cette base manque, le lieu est en défaut, le cadavre n'est pas à sa place. Où est-il ? Il n'est pas ici et pourtant il n'est pas ailleurs; nulle part? mais c'est qu'alors nulle part est ici. La présence cadavérique établit un rapport entre ici et nulle part. […] Ici est le cadavre, mais ici à son tour devient cadavre: "ici-bas", absolument parlant, sans qu'aucun "là-haut" ne s'exalte encore.» (*Ibid*. pp. 268-269).

it is situated nowhere. But how can this nothingness be imagined? I cannot avoid the oxymoron: how can one imagine the unimaginable?

When I turn away from Weston's image — or rather, when it allows me to do so — I am tempted to paraphrase one of Cioran's merciless aphorisms[21]: «Only a madman, indeed, could have thought of inverting the Nothingness, of having degraded it into a universe».

[21] «Le grand forfait de la douleur est d'avoir *organisé* le Chaos, de l'avoir dégradé en univers» (Cioran, E., 1980 (1952), *Syllogismes de l'amertume*, p. 103).

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Remarques sur l'imagination : perception, mathématiques et liberté

Luciano Boi

Abstract:
The spatial imagination and visualization are an essential component of mathematical understanding and of knowledge. Both, geometric view and spatial visualization are helpful tools allowing for a better adaptation of our organism to the varying environmental conditions. It is likely that some of the most intriguing and profound mathematical mysteries of our human beings' life was cached by the dimensions three and four of space. In this sense, these "low" dimensions have captured precious information and clues about our intuition, perception and grasping of space. Of course, when we pass on to a productive thinking of abstract geometric objects such as, for example, *n*-dimensional space, fiber spaces, connections, module spaces, topoi, and numerous other algebraic and topological structures that belong specifically to modern mathematics, and where sensory intuition is lacking, another type of mathematical imagination and visualization is required, and therefore we need a deeper form of intuition.

The imagination is also essential for developing our resistance against the militarization of science and the use of technologies for war, the destruction of cities' infrastructures and the elimination of human life. We need imagination for standing with scientists, scholars and people in the imperative combat for freedom, justice and the acknowledgement of philosophical and anthropological diversity. Furthermore, imagination is needed for assuring the autonomous creativity of peoples and the critical openness of minds. Only by means of imagination we can resist and stand opposed to the uniform thinking and be able to promote a real scientific, philosophical and cultural pluralism.

Keywords: *Imagination, visualization, intuition, space, geometry, perception, colors, time, alternative logics, resistance, freedom.*

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Resumé

L'imagination spatiale et la visualisation sont des composantes essentielles de la compréhension mathématique et de la connaissance. La vision géométrique et la visualisation spatiale sont toutes deux des outils précieux qui permettent une meilleure adaptation de notre organisme aux conditions environnementales changeantes. Il est probable que certains des mystères mathématiques les plus intrigants et profonds de la vie humaine soient liés aux troisièmes et quatrièmes dimensions de l'espace. En ce sens, ces « basses » dimensions ont capturé des informations précieuses et des indices sur notre intuition, notre perception et notre compréhension de l'espace. Bien entendu, lorsque nous passons à une réflexion productive sur des objets géométriques abstraits tels que, par exemple, l'espace n-dimensionnel, les espaces fibrés, les connexions, les espaces de modules, les topos et de nombreuses autres structures algébriques et topologiques propres aux mathématiques modernes — là où l'intuition sensorielle fait défaut — un autre type d'imagination et de visualisation mathématique est requis. Il nous faut alors une forme d'intuition plus profonde.

L'imagination est également essentielle pour développer notre résistance à la militarisation de la science et à l'utilisation des technologies à des fins de guerre, de destruction des infrastructures urbaines et d'élimination de la vie humaine. Nous avons besoin d'imagination pour nous tenir aux côtés des scientifiques, des chercheurs et des citoyens dans le combat impératif pour la liberté, la justice et la reconnaissance de la diversité philosophique et anthropologique. De plus, l'imagination est nécessaire pour garantir la créativité autonome des peuples et l'ouverture critique des esprits. Ce n'est qu'à travers l'imagination que nous pouvons résister à la pensée unique et promouvoir un véritable pluralisme scientifique, philosophique et culturel.

Mots clés : Imagination, visualisation, intuition, espace, géométrie, perception, couleurs, temps, logiques alternatives, résistance, liberté.

« Ce qui fait la qualité de l'inventivité et de l'imagination du chercheur, c'est la qualité de son attention, à l'écoute de la voix des choses. Car les choses de l'Univers ne se lassent jamais de parler d'elles-mêmes et de se révéler à celui qui se soucie d'entendre. »
Alexandre Grothendieck

«L'immaginazione è la prima fonte della felicità umana.»
Giacomo Leopardi

« L'imagination veut toujours à la fois rêver et comprendre, rêver pour mieux comprendre, comprendre pour mieux rêver. »
Gaston Bachelard

« La liberté, comme la mathématique, est fille de l'imagination. »
René Thom

1. Imagination e perception

À partir des années quatre-vingt du siècle dernier les théories « connexionnistes » ont connu un certain essor et succès. D'un point de vue scientifique, on peut dire qu'elles sont essentiellement un prolongement de la cybernétique qui s'est développée à partir des année 1950 aux États Unis puis de spacela théorie de l'information appliquée aux circuits électroniques et aux réseaux informatiques. D'un point de vue plus philosophique, elles font surtout appel aux théories de l'animal-machine et de l'homme-machine qui remontent, respectivement, à René Descartes et à de La Mettrie ; puis, beaucoup plus récemment (au début des années 1980), à une approche dite « computationnelle » en sciences cognitives et dont les principales applications ont concerné la théorie de la vision par des descriptions algorithmiques et des implémentations matérielles. Relativement au problème de la perception et de la cognition spatiale, la théorie « connexionniste » repose entièrement sur le postulat à notre avis très peu vraisemblable selon lequel les mécanismes cognitifs de la perception seraient de la même nature et agiraient de la même façon que les mécanismes qui permettent à un ordinateur ou à toute autre machine « intelligente » de fonctionner. Mais peut-il un tel postulat servir de fondement à une théorie de la perception humaine.

Une simple remarque semble à ce propos s'imposer d'emblée. Il existe très peu de systèmes biologiques et même de systèmes physiques qui soient fermés et autosuffisants, c'est-à-dire dont le fonctionnement n'a besoin d'aucun échange

énergétique, thermodynamique ou autre avec l'extérieur. À plus forte raison, tout système vivant, et un organisme qui perçoit est un système vivant par excellence, présente la caractéristique fondamentale d'être constamment en interaction avec l'environnement naturel (physique, chimique et biologique) proche et peut-être pas seulement proche. De plus, il possède ce qu'on peut appeler une "mémoire psychique", en ce sens qu'il réactualise dans le présent les compétences passées appréhendées au cours de (et pour) son développement. À cet égard, notre perception subjective de la réalité est tributaire des événements culturels et symboliques et plus généralement anthropologiques au contact desquels nous avons vécu et qui ont façonné nos expériences. Ces deux sources de la perception constituent ce qu'on pourrait qualifier de « milieu vital ». Elles agissent aussi bien sur l'évolution ontogénétique que phylogénétique des capacités perceptives des espèces et surtout des primates, et, par ailleurs, elles confèrent à l'espèce humaine des qualités cognitives extraordinaires et tout à fait spécifiques, qui la rendent singulièrement prééminente comparée à tout autre espèce, tant sur le plan de sa morphologie et de la complexité neurophysiologique, que de ses facultés proprement mentales ; celles-ci reposent beaucoup plus sur l'imagination que sur les sensations.

La reconnaissance des formes dans notre espace ambiant est l'un des problèmes fondamentaux de la perception, et on comprend aisément qu'il est d'un intérêt vital pour nous, pour toutes nos actions quotidiennes, voire même pour notre survie. C'est à partir d'une connaissance plus approfondie du genre de processus sous-jacents à la reconnaissance des formes, qu'il nous paraîtrait possible de surmonter l'écart entre deux niveaux importants de la perception : celui de la reconnaissance et classification des formes par une action intégrée des différents systèmes sensoriels et du système nerveux central, et le niveau des représentations sémantiques et de l'attribution de sens aux événements de la perception. Il faut cependant préciser tout de suite que cette relation ne doit pas être selon nous conçue en les termes d'une sous-détermination du second niveau par le premier, à savoir de la sphère du sens et de la pensée par les substrats physique et neurophysiologique du cerveau, mais bien plutôt comprise selon une relation de continuité et de discontinuité à la fois, d'effective réciprocité entre ces deux niveaux. Il est assurément indéniable, d'une part, qu'il y ait une continuité fondamentale (une sorte d'interaction dynamique bidirectionnelle, en forme de boucles qui rétroagissent, pourrait-on dire) entre la manière dont évoluent (ontogénétiquement, phylogénétiquement et à travers l'environnement de chaque individu) les propriétés et les fonctions neurophysiologiques dont sont capables les substrats cérébraux et les états et événements « mentaux » qui peuvent en résulter et qui correspondent à telle ou telle configuration morphologique, à telle ou telle structure dynamique du cerveau. De l'autre, il faut considérer, du fait de la grande plasticité morpho-fonctionnelle de celui-ci, que la perception et la pensée exercent en retour une action importante sur le développement et fonctionnement de

notre système nerveux central et notamment sur la plasticité cérébrale, si bien qu'on peut dire, d'un côté, que c'est un type précis de structure anatomique-fonctionnelle et certaines propriétés neurophysiologiques de notre système central qui rendent possible la pensée, mais, de l'autre, que ce sont la pensée (la conscience que nous avons de cette pensée) et l'action qui souvent l'accompagne qui au fond favorisent et canalisent le développement de notre cerveau. Il s'agit de deux aspects ou niveaux d'organisation et d'expression profondément liées d'un même phénomène neuro-physiologique-cognitif.

Une hypothèse analogue a été avancée, il y a quelques années, par le neurophysiologiste John Eccles (1994). En refusant toute conception foncièrement matérialiste ou « naturaliste » du rapport corps-esprit, qui ont en commun le fait de postuler un monisme ou une identité entre l'activité neuronale et la pensée, il a avancé l'hypothèse que des événements immatériels tels que la conscience, la mémoire, l'imagination, les émotions, la volonté, etc., sont à même d'exercer une certaine action sur des organes matériels (biologiques) tels que les neurones et les synapses du cortex cérébral. Il ne s'agit pas seulement, comme William James l'avait suggéré (1890, vol. 1, chap. I), de la possibilité que l'esprit soit une propriété que s'est donnée le cerveau lorsqu'il est devenu trop complexe pour gérer son propre fonctionnement, mais de l'hypothèse beaucoup plus radicale selon laquelle, pour résumer, le monde de la matière et de l'énergie (donc l'activité proprement physico-chimique du cerveau) serait en interaction causale avec le monde des états et événements mentaux (la sphère de la pensée dans un sens très large). En appui à cette conjecture, Eccles invoque des recherches et plusieurs résultats expérimentaux montrant que certains types d'événements mentaux ont pour effet de susciter une activité du cortex cérébral. Par exemple, une expérience réalisée sur des primates décrit comment une intention, un acte de volonté, peut faire naître dans l'aire motrice supplémentaire (AMS) au sein du cerveau (dont on suppose qu'elle joue un rôle dans le déclenchement volontaire du mouvement) une vaste gamme de réactions neuronales qui aboutissent à l'ensemble complexe des mouvements qu'il faut faire pour exécuter telle ou telle action. Il est important en plus de préciser qu'il s'agit de mouvements volontaires et non pas d'automatismes, et que souvent le sujet se livre à ce qu'on appelle une « programmation intérieure » de la séquence de mouvements, c'est-à-dire qu'il répète dans son for intérieur les mouvements successifs mais sans en exécuter aucun.

Il convient d'expliciter davantage les considérations faites sur le rapport corps-esprit. Les théories monistes de l'identité entre le neural et le mental, quoiqu'elles aient eu le mérite de reconnaître l'importance qu'il y a à prendre en compte la relation causale entre le monde matériel, dont relèvent les substrats des états neurophysiologiques du cortex cérébral, et le monde des actes et événements mentaux, n'ont pas pu éviter tôt ou tard d'aboutir à une position foncièrement réductionniste sur la perception et notamment sur la question des relations entre l'action du corps

et l'activité de l'esprit. On peut la résumer ainsi : il y a une surdétermination du « monde mental » par la « réalité matérielle » ; autrement dit, la sphère de la conscience (et tous les actes qui forment sa constellation variée) peut être décrite et comprise, par une série de passages qui représentent autant d'opérations d'une réduction physico-mathématique, grâce à des explications de nature causale qui renvoient directement à certains phénomènes et principes du monde matériel ou à des substrats neurophysiologiques du cortex cérébral, ce qui en l'occurrence revient au même ; c'est bien là, d'ailleurs, le point central du projet cognitiviste de « naturalisation » de la perception et de la conscience.

Ces deux postulats sont loin d'être justifiés et encore moins démontrés. Il est temps de démystifier cette idée qui s'est rapidement installée dans les esprits autour du paradigme cognitiviste-réductionniste, qui consiste à faire croire que beaucoup de propriétés de l'esprit, de la pensée et du langage finiront par être dévoilées une fois que la perception et la conscience seront complètement naturalisées, c'est-à-dire ramenées à la connaissance certaine de leur substrat physico-chimique. On remarquera d'abord que déjà en ce qui concerne la perception visuelle, il faut bien insister sur la différence irréductible entre le « visible » – en tant qu'il tombe sous le sens de la vue ou qui appartient à notre champ de vision – et la « vision », qui ne se réduit pas à ce qui est immédiatement et directement vu ou visible. En fait, la vision est moins un dispositif purement sensoriel de l'organe de la vue (ou simplement une propriété physique du corps), qu'une modalité complexe et différenciée de la pensée, car non seulement elle nous permet de « voir » au-delà des limites physiques et physiologiques de la vue, mais également d'anticiper ce que nous pourrions voir et qu'il nous est matériellement impossible de voir temporairement ; dans cette anticipation l'imagination e la visualisation jouent un rôle essentiel.

Puis il y a la distinction riche de conséquences entre « visible » et « invisible », c'est-à-dire entre ce qui est situé dans le champ visuel même si dans une de ses zones les plus éloignées ou bien occultées à cause, par exemple, d'une faible luminosité ou de toute autre cause psychophysique, et ce qui est extérieur au champ visuel, déborde le visible et ne se donne d'aucune manière à être vu par les yeux. L'invisible peut se révéler être, à une autre échelle, comme l'autre face, l'image en miroir du visible, mais il peut par ailleurs cacher une toute nouvelle réalité caractérisée par d'autres propriétés et organisée selon des lois différentes. L'invisible peut se « loger » sous les replis du visible, appartenir à un autre niveau d'existence du même univers ; comme il peut, en revanche, n'exister qu'au-delà des limites spatiales et temporelles du monde visible et à la limite démentir tous les attributs qu'on lui prête comme « vrais ». On pense ainsi que plusieurs propriétés qui pourraient caractériser l'univers à l'échelle microscopique (le monde des particules subatomiques, de certaines molécules essentielles à la vie, de quelques phénomènes complexes en chimie, etc.), comme l'asymétrie spatiale, l'irréversibilité du temps, le principe de non-localité et d'autres encore, renversent pour ainsi dire l'image qu'on s'était faite de la réalité

macroscopique. De ce point de vue, la découverte de l'invisible fait plus appel à une vision « conceptuelle », à l'intuition et à l'imagination.

Dès lors on conçoit que la vision est multimodale, capable d'étendre le spectre des possibilités pour permettre la perception des formes des objets et de leurs qualités et d'en approfondir le sens. Elle est également susceptible de receler une variété de significations différentes suscitées par une interaction constamment renouvelée entre sujet et objet, entre perception et monde physique. Autrement dit, l'analyse du monde visuel n'est qu'un prélude à la façon que nous avons de réagir face à lui, laquelle comprend reconnaissance, action, idées, émotions, etc. Et la réaction évolue nécessairement avec l'apprentissage. Le même stimulus peut en effet susciter des réactions différentes selon les significations que nous avons apprises à lui attribuer. Plus important encore : c'est la signification que nous attribuons à un stimulus et à l'objet dont il émane qui permet de former l'unité du percept correspondant ; celui-ci recouvre sous le même sens plusieurs catégories de stimuli et même d'objets. Ce qui n'empêche pas, par ailleurs, une fois constituée l'assise solide du percept au moyen d'une représentation unitaire des différentes perceptions, de l'affiner conceptuellement et de le pluraliser sémantiquement. Ainsi, au caractère discret et séparé des stimuli visuels s'oppose le caractère continu et intégrateur de la perception et de la signification ; entre les deux se situe souvent le travail de l'interprétation ou de la modélisation. Et c'est d'ailleurs précisément au niveau de la signification qu'il existe un écart irréductible entre la chaîne causale des stimuli, depuis leur source physique jusqu'aux événements neurophysiologiques qui à travers la rétine puis les relais nerveux s'activent dans le cerveau, et les images mentales des objets extérieurs que nous formons sans cesse. À la clarification de ce rapport important entre l'action de l'intégration multisensorielle et le processus de la perception le neurophysiologiste britannique Charles Sherrington a apporté une contribution fondamentale : il a notamment montré le rôle que joue dans la perception l'intégration de l'action sensori-moteur, et le fait que l'activité synaptique de chaque neurone s'intègre dans des circuits neuronaux.

L'un des aspects fondamentaux dans les recherches sur la perception est celui de comprendre le rôle que jouent les propriétés globales des formes visuelles au niveau de la construction conceptuelle profonde par rapport aux propriétés locales des stimuli physiques provenant de l'environnement. D'où l'importance d'arriver à clarifier la relation entre ces deux types de propriétés. La description de nombreux phénomènes montre clairement qu'une caractéristique perceptive locale n'est pas seulement fonction de la stimulation locale, mais qu'elle est déterminée par des caractéristiques structurelles du champ perceptif global. Plus spécifiquement on a pu montrer (voir en particulier les travaux de Gaetano Kanisza) que les qualités chromatiques, à savoir les qualités sensibles correspondant aux couleurs, ne peuvent pas être considérées seulement comme un des *matériaux* à partir desquels s'organise la perception de l'espace ou des caractéristiques spatiales des objets, mais

qu'il faut aussi tenir compte de l'influence que l'organisation spatiale exerce sur l'aspect de l'élément chromatique lui-même. Espace et couleur ne sont donc pas des données distinctes, que l'on peut considérer isolément, mais bien plus des variables interdépendantes d'un processus unitaire global d'organisation perceptive. Ce lien entre l'espace et la couleur s'exprime notamment sous le rapport que la forme du contour d'une surface renferme avec le mode d'apparence phénoménal de la couleur. Plus précisément, Kanisza et d'autres théoriciens de la perception de la couleur ont prouvé que les qualités chromatiques d'une surface (d'un objet) ne peuvent pas être considérées comme étant en relation univoque avec les dimensions physiques correspondantes du rayonnement lumineux, mais bien plutôt que le résultat perceptif peut varier – pour un même ensemble de valeurs de ces dernières – en fonction du mode d'apparence, et donc en fonction des caractéristiques structurelles de l'organisation spatiale dont elles font partie.

Dans cette constitution, ordonnance et organisation de l'univers des couleurs, comme dans le rôle que tient cet univers pour la présentation des rapports spatiaux et objectifs, on a affaire à l'opération de l'imagination productrice que Kant a désignée comme un élément nécessaire de la perception. Il s'agit là d'un acte de formation primaire qui concerne et enfin rend possible l'intuition en tant que totalité, et dont un des stades supérieurs serait celui de l'« idéation symbolique » que l'on peut faire correspondre au monde des prégnances subjectives. Ici, il n'y a ni vue ni rien de visible qui ne relève d'un mode quelconque de vision intellectuelle, s'appuyant sur des concepts, d'idéation en général. À partir du moment où on passe d'une forme de vision à une autre, c'est l'intuition même prise dans sa totalité, dans une unité indivise, et non pas un seul de ses moments isolés, qui subit une métamorphose caractéristique. C'est l'importance de cette imagination productrice qui a conduit Goethe à affirmer que toute vue « sensible » consiste toujours à voir avec les « yeux de l'esprit », et avant lui, Galilée et Kepler furent capables de voir avec les yeux de l'esprit, bien au-delà de ce que les lunettes astronomiques leur auraient permis de voir.

Ceux qui pensent qu'on peut expliquer la perception uniquement par des lois physico-chimiques et ses mécanismes neuronaux et les événements de la conscience par les états cérébraux sont naturellement enclins à essayer de réduire les aspects intuitifs et cognitifs de la perception à ses aspects physiques objectifs, et à considérer ceux-ci comme des faits fondamentaux et ceux-là comme un épiphénomène ou un accident de l'évolution.

Un dernier aspect que nous voudrions brièvement évoquer dans cette partie concerne la question du temps. Outre le rôle majeur qu'il revêt dans les théories scientifiques, notamment à partir du développement de la théorie thermodynamique à la fin du XIXe siècle surtout aux idées nouvelles de Boltzmann, puis de la découverte de la relativité restreinte (1905) et générale (1915-16) par Einstein, et de la mécanique quantique (1925-26) au siècle dernier, la nature du temps a été un

sujet de prédilection aussi de la littérature métaphysique, et bien sûr en philosophie grâce aux travaux de Bergson, Husserl et Heidegger. Il suffit de penser aux réflexions pénétrantes qui nous ont été léguées par P. Valéry et L. Borges. Dans un conférence intitulée "Le temps", ce dernier écrit :

« Pourquoi n'imaginer qu'une seule série de temps ? Je ne sais pas si votre imagination accepte cette idée. L'idée qu'il y a plusieurs séries de temps et que ces séries de temps ne sont ni antérieures, ni postérieures, ni contemporaines – naturellement les éléments de cette série sont antérieurs, postérieurs ou contemporains les uns par rapports aux autres. Ce sont des séries différentes. Nous pourrions imaginer qu'il en va de même de nos êtres conscients. L'idée est que chacun de nous vit une série de faits et que cette série de faits peut être parallèle ou non à d'autres. Pourquoi accepter cette idée ? Elle est plausible ; on aurait ainsi un monde plus vaste, beaucoup plus étrange que le monde actuel. C'est l'idée qu'il n'y a pas un temps unique. Je crois que cette idée n'est pas rejetée par la physique actuelle… L'idée qu'il y a des temps divers. Pourquoi imaginer un temps unique, un temps absolu, comme l'imaginait Newton ? (…) Il est curieux de constater que des trois temps – le passé, le présent et le future – dans lesquels nous avons divisé le temps, le plus difficile à concevoir, le plus insaisissable soit le présent, ! Le présent est aussi insaisissable que le point ? Car si nous imaginons celui-ci sans extension, il n'existe pas ; nous devons imaginer que le présent apparent est en quelque sorte un peu le passé et un peu l'avenir. C'est-à-dire que nous sentons le temps qui passe. Quand je parle du temps qui passe, je parle de quelque chose d'abstrait. Le présent n'est pas une donnée immédiate de la conscience. Nous sentons que nous évoluons dans le temps, c'est-à-dire que nous pouvons concevoir que nous passons du futur au passé ou du passé au futur mais à aucun moment nous pouvons dire au temps ; *Arrêt-toi* ! *Tu es beau* ! ... comme le souhaitait Goethe. Le présent ne s'immobilise pas. Un pur présent est impensable : il serait inexistant. Il comporte toujours une parcelle de passé et une parcelle de futur. Il semble que ce soit indispensable au temps ».

Citons un autre exemple. Dans la littérature espagnole et notamment dans celle magnifiquement représentée par Cervantes dans *Don Quijote de la Manche*, le temps naïf de l'individu n'est pas unidimensionnel, c'est un temps de retour, retour des saisons, du soleil, un temps dans lequel l'accumulation associée au vieillissement ne se fait pas d'une manière tristement bureaucratique. L'ascèse scientifique, quand elle est vécue comme une forme d'isolément vis-à-vis d'autres quêtes menées avec une authentique passion dans divers domaines, conduit à un appauvrissement considérable des possibilités de nature essentiellement poétique que recèle la perception naïve du temps. Toute la trame du récit de Cervantes est construite sur le thème de la dualité des attitudes mentales de don Quichotte, fou à ses heures, plein d'entendement et de sagesse quand il ne s'agissait pas du sujet central ou adjacent de sa folie. Cette dualité n'est point synonyme d'incompatibilité, d'incommensurabilité, car ces deux sortes d'attitudes se rejoignent, voire se complètent dans un espace et un temps nouveau

qui sont ceux de la représentation littéraire ; celle-ci transpose avec imagination la nature des choses et les traits du réel, dont les limites ne coïncident point avec celles de la réalité telle qu'elle existe. Cette dualité se manifeste comme une corrélation vivante entre la psyché d'un homme et sa complexion physique, entre les conditions naturelles et les phénomènes psychiques.

2. Imagination et mathématiques

Les recherches de Bernhard Riemann ont représenté une contribution majeure au développement de la pensée mathématique. Il a notamment révolutionné la géométrie en montrant que, d'un point de vue purement mathématique, la géométrie euclidienne peut être énoncée et comprise comme appartenant à la théorie générale des variétés et plus en général à la géométrie différentielle. Il faut bien voir que Riemann conçoit celle-ci d'une façon beaucoup plus générale qu'elle ne l'avait été avant lui : outre l'étude des courbes et des surfaces dans l'espace tridimensionnel ordinaire, la nouvelle géométrie différentielle élaborée par le mathématicien allemand envisage désormais ces figures comme des « objets » mathématiques intrinsèques et autonomes, et elle considère en même temps d'autres objets mathématiques tels que celui de variété différentielle. Ce ne sont plus les lois analytiques abstraites de ces objets qui intéressent au premier chef Riemann, mais plutôt leurs structures mathématiques essentielles et tout particulièrement celles géométriques et topologiques. Dans l'histoire des mathématiques modernes, Riemann a été celui qui a fait passer la pensée géométrique des lois à celle des structures : des mathématiques il incontestablement une conception structurale, toutefois alliée à une vision qualitative des objets mathématiques ; en plus, l'intuition et l'imagination y jouent un rôle fondamental pour la compréhension de leurs possibles transformations et déformations.

Une telle vision comporte déjà un dépassement d'une conception purement logique et formaliste des mathématiques. Elle ne peut pas non plus être rapprochée de l'idée bourbakiste des mathématiques comme des théories déjà « propres » et « achevées », bien formalisée (axiomatisée) dans des structures algébriques figées au-delà desquelles il ne faut surtout pas chercher une signification autre. En revanche, Riemann voit les mathématiques en quelque sorte comme un organisme vivant doué d'un dynamisme interne, et dont les concepts et les structures qui lui appartiennent prennent naissance dans un mouvement même de la pensée qui fait constamment appel aux ressources de l'intuition et de l'imagination. Ces structures sont des entités idéales, des formes intelligibles « habitant » un univers abstrait, et en ce sens elles sont possibles, mais elles sont également des modèles s'actualisant dans des phénomènes réels. Elles s'inscrivent dans ce mouvement vital de la pensée par lequel nous essayons d'idéaliser les phénomènes réels peut-être pour être plus à même d'en élaborer des représentations signifiantes.

On remarquera que la mathématique est la première science à ne pas avoir des

objets matériels à proprement parler. En effet, elle élabore des objets qui existent d'abord et avant tout dans un monde idéal d'entités et de formes abstraites, bien que celles-ci ne soient pas nécessairement absolues, immuables et atemporelles, et qu'elles puissent même connaître des réalisations physiques concrètes. Or même le bourbakiste le plus orthodoxe ne pourrait pas nier que l'intuition géométrique est un élément essentiel du raisonnement mathématique. Pour citer juste un exemple, il n'aurait pas été possible de découvrir le théorème de classification des surfaces (variétés compactes de dim. 2) sans l'apport fondamental d'une certaine intuition et imagination géométriques. Le théorème dit que *toute surface fermée (compacte, sans bords), connexe et orientée S est homéomorphe (ou topologiquement équivalente) à l'une des trois variétés bidimensionnelles suivantes : la sphère, la somme connexe d'un certain nombre g de tores, la somme connexe d'un certain nombre g de plans projectifs*. En 1907, les mathématiciens Paul Koebe et Henri Poincaré énoncent et démontrent, de manière autonome, un autre résultat fondamental des mathématiques du XXe siècle et qui est lié profondément au précédent, appelé *théorème d'uniformisation* : *toute surface de Riemann simplement connexe (comme, par exemple, la sphère de Riemann) est isomorphe au plan, au disque ou à la sphère*.

Ces deux résultats sont à mettre en relation avec la théorie de Marston Morse développée entre la fin des année 1940 et le début des année 1950. Cette théorie permet de caractériser la topologie des variétés différentielles en étudiant le comportement d'un certain type de fonctions lisses ; plus spécifiquement, de décomposer ou stratifier les variétés en parties plus « simples », c'est-à-dire en sous-variétés, à partir des points critiques de la fonction donnée évoluant dans une variété ayant certaines propriétés. C'est une théorie qui fait le lien entre les fonctions lisses et la structure topologique des variétés compactes. En d'autres termes, la théorie de Morse permet d'étudier la topologie d'une variété différentielle en analysant les lignes de niveau d'une fonction *générique* définie sur cette variété. Les concepts fondamentaux qu'elle a introduit ont permis d'explorer la relation complexe entre la géométrie, l'algèbre et la topologie, et contribué à mieux comprendre la forme et les différentes structures des espaces mathématiques. La théorie de Morse, aujourd'hui piètre angulaire de la géométrie et topologie différentielles, est un magnifique exemple montrant, étape par étape et sans suivre une logique préétablie, en quoi consiste le travail à l'œuvre de l'intuition et de l'imagination en mathématiques ; dans cette théorie méthodes et techniques s'auto-alimentent pour dévoiler de nouvelles structures et propriétés inhérentes aux espaces. À propos de la théorie de Morse, le mathématicien René Thom, qui a fait des contributions fondamentales à la théorie, a écrit : « Pour ceux qui voient dans les mathématiques une construction bien réglée s'ordonnant logiquement selon une taxonomie bien établie, la théorie de Morse pose un problème. Elle touche à l'analyse, à la géométrie différentielle locale, à la topologie globale. Mais elle n'appartient en propre à aucune de ces disciplines, elle est strictement inclassable ; d'une part, elle se trouve à l'origine de presque tous

les grands courants de la mathématique récente ; de l'autre, elle domine, telle un énigmatique monolithe, une bonne part du paysage mathématique contemporain. Ce monolithe, nous n'avons pas fini de l'interroger ».

Les mathématiques fécondes et « vivantes » sont celles qui associent au raisonnement analytique une image géométrique, une entité abstraite comme une fonction à un objet « réel » (« réel » pour le mathématicien). Par exemple, pour que la surface de Riemann soit une sphère, il suffit qu'il existe pour une courbe de degré fixé un assez grand nombre de *points doubles*, qui obligent la courbe à être *unicursale* : on peut dessiner les points réels dans le plan d'un seul tenant. Or des « faits » comme ceux que l'on vient de voir mobilisent l'imagination, même sans démonstration, et permettent de mieux comprendre les idées sous-jacentes. Ces idées, qui font appel à la géométrisation et visualisation de la pensée mathématique, nous apprennent en effet à chercher et à trouver d'autres manifestations de l'unité du monde que celles apparentes.

La représentation en topologie ne peut pas se passer d'un processus de « visualisation mathématique », d'idéalisation ou d'imagination. Cette visualisation fait appel à un nouveau type d'intuition, plus conceptuelle et en même temps plus picturale (diagrammatique), et résolument éloignée des sensations immédiates et de l'intuition empirique. En topologie, la figure, le dessin, le diagramme ou le graphe ne sont plus l'image de quelque chose, d'on objet extérieur que l'image se chargerait de représenter, mais sont eux-mêmes l'objet qui représente un univers de relations et de propriétés « cachées » absentes de l'image. On peut considérer qu'en topologie, la « sémiotisation » du statut de l'image est encore plus développée par rapport à d'autres sciences et elle atteint un niveau très fin. La topologie permet une autre approche dans l'étude des objets qui ne se restreint pas aux relations quantitatives des grandeurs et aux aspects visuels, mais considère davantage la forme (l' « image ») dans sa globalité, ainsi que le spectre des variations possibles (continues et discrètes) de ses configurations. Bref, la topologie a changé profondément notre pensée et culture scientifique de l'image.

La topologie est la science qui étudie les déformations continues des surfaces et des variétés à *n* dimensions. Par exemple, la tasse et la bouée sont bien sûr deux objets différents mais on peut passer de l'une à l'autre par une déformation continue qui n'introduit aucune déchirure ; en des termes plus mathématiques, la tasse et la bouée sont *homéomorphes* (ont la même forme). En topologie on arrive au paradoxe (selon le sens commun) de ne pas distinguer une tasse de café d'un beignet. De ce point de vue, la topologie est une science totalement contre-intuitive et non-visuelle (si l'on entend par intuition l'expérience immédiate de nos sensations ou même la perception de ce que nous voyons), mais, d'un autre côté, la topologie est guidée en grande partie par un effort d'intuition e d'imagination profondément conceptuel, qui se situe à la frontière du perceptible et de l'imperceptible, et elle puise constamment

dans l'invisible en le transformant en un monde réel qui a pleinement son propre sens (objectif) et un sens pour nous (intersubjectif).

La connaissance est un processus dans lequel l'abstraction (la rigueur) et l'imagination (l'intuition) agissent de concert et où l'une a besoin de l'autre, devient féconde en présence de l'autre. L'élimination du rôle de l'intuition et de l'imagination dans la recherche scientifique conduirait à une aridité de la pensée, à une stagnation de la créativité, à une forme de scientisme réducteur et grossier. La recherche scientifique doit abandonner son aspect purement technique et applicatif pour renouer avec la réflexion individuelle et la recherche d'images mentales profondes. Ceci vaut aussi pour la mathématique, où à la recherche d'une pensée rigoureuse et exigeante (exprimée en un langage abstrait, sans toutefois tomber dans le pur formalisme) il faut associer l'intuition et l'imagination. Ainsi, elle perdra certainement en certitude, en rigueur formelle, mais elle acquerra une plus grande compréhension du monde réel et une importance "humaine". Sur ce thème a écrit de très belles et pénétrantes pages le mathématicien et philosophe des sciences français René Thom, que nous, et surtout les enseignants et leurs élèves, devrions relire et méditer. Sur ce même sujet, le mathématicien américain William Thurston, l'auteur d'idées et de résultats très profonds et originaux dans les domaines notamment de la géométrie et de la topologie, dont on peut citer tout particulièrement son *programme et sa conjecture de géométrisation* qui inclut aussi celle énoncée par Henri Poincaré en 1904 et qui a été résolue par le mathématicien soviétique Grigori Perelman en 2003, a écrit :

«To me the utilitarian goals of mathematics (…) are important, but secondary. *Mathematics has a remarkable beauty, power, and coherence, more than we have ever expected. It is always changing, as we turn new corners and discover new delights and unexpected connexions with old familiar grounds.* The changes are rapid, because of the solidity of the kind of reasoning involved in mathematics. (…) *Mathematics is like a flight of fancy, but one in which the fanciful turns to be real and to have been present all along. Doing mathematics has the feel of fanciful invention, but it is really a process of sharpening our perception so that we discover patterns that are everywhere around*. The natural reaction, when someone is having trouble understanding what you are explaining, is to break up the explanation into smaller pieces and explain the pieces one by one. This tends not to work, so you break up even further and fill in even more details. (…) *But human mind does not work like computers: it is harder, not easier, to understand something broken down into all the precise little rules than to grasp it as a whole. It is very hard for a person to read a computer assembly language program and figure out what it is about. A computer reads and executes it in the blink of an eye*. *But the powerful computer in the world is not clever enough to drive a car safely, or control a stroll along the sidewalk, or come up with an interesting mathematical discovery*. There is natural and strong tendency, in thinking mathematics, to use the logical order and to explain all the techniques and

answers before bringing up the examples and the questions, on the supposition that the student will be equipped with all the techniques necessary to answer them when they arise. *It is better to keep interesting unanswered questions and unexplained examples in the air, whatever not the students, the teachers, or anybody is yet ready to answer them. The best psychological order for a subject in mathematics is often quite different from the most efficient logical order*. *As mathematicians, we know that there will never be an end to unanswered questions*. In contrast, students generally perceive mathematics as something which is already cut and dried – they have just not gotten very far in digesting it. We should present mathematics to our students in a way which is at once more interesting and more like the real situations where students will encounter it in their lives – with no guaranteed answer » (les passages en italiques sont soulignés par nous).

La mathématique comporte une composante ludique (voire passionnelle) et une plus mistique, plus proche de la métaphysique et d'une certaine force spirituelle. Et en effet la mathématique peut être vue comme une sorte de métaphysique, au sens qu'elle va au-delà de la physique, à la fois sur le plan conceptuel et sur celui du langage. D'ailleurs, l'étymologie même du mot « métaphysique » indique que la mathématique fait abstraction de la physique, et qu'en plus d'idéaliser ses objets empiriques, elle découvre de nouveaux concepts, de nouvelles structures et propriétés de ces objets. Autrement dit, à travers l'intuition, l'imagination et l'abstraction créatrice la mathématique découvre des structures et propriétés du monde réel. Les exemples sont nombreux et particulièrement significatifs, citons les polyèdres, les symmetries (ou groupes), les surfaces minimales, la suite de Fibonacci et du nombre d'or, les nœuds et les tresses, les fractales, etc. D'une certaine manière on pourrait faire le même type de considération pour la philosophie, dont une des péculiarités consiste précisément à concevoir et élaborer de nouveaux concepts, souvent inattendus et contraires au sens commun.

3. Imagination et résistance (remarques diverses)

Les considérations précédentes font revenir à l'esprit les paroles passionnées et très profondes du poète et philosophe Giacomo Leopardi, qui nous paraissent encore plus appropriées aujourd'hui qu'elles ne l'étaient quand il les avait prononcées. Écrivait Leopardi: «All'uomo sensibile e immaginoso, che viva, come io sono vissuto gran tempo, sentendo di continuo e immaginando, il mondo e gli oggetti sono in un certo modo doppi. Egli vedrà cogli occhi una torre, una campana; udrà cogli orecchi un suono di una campana; e nel tempo stesso coll'immaginazione vedrà un'altra torre, un'altra campana, udrà un altro suono. In questo secondo genere di obbietti sta tutto il bello e il piacevole delle cose. Triste quella vita (ed è pur tale la vita comunemente) che non vede, non ode, non sente se non che oggetti semplici, quelli solo di cui gli occhi, gli orecchi e gli altri sentimenti ricevono la sensazione»

(«À l'homme sensible et inventif, qui vit, comme j'ai vécu longtemps, en ressentant continûment et en imaginant, le monde et les objets lui apparaissent en quelque sorte comme doubles. Il verra avec ses yeux une tour, une cloche ; il entendra avec ses oreilles le son d'une cloche, et en même temps avec l'imagination il verra une autre tour, une autre cloche, il entendra un autre son. Dans ce second genre d'objets réside toute la beauté et le plaisir des choses. Triste est cette vie (et pourtant telle est la vie communément) qui ne voit et qui n'entend que des objets simples, ceux dont seulement les yeux, les oreilles et les autres sens éprouvent des sensations » ; c'est nous qui traduisons).

Contrairement à ce que l'on pourrait penser au premier abord, dans ce passage le poète n'invite pas à fuir la réalité et encore moins il exalte la réalité virtuelle. Par ses mots, Leopardi tisse l'éloge de l'imagination créatrice et propose d'élargir notre vision des objets, pas seulement du point de vue de leur forme spatiale mais aussi de celui mental. Il dit que derrière un objet simple que nous voyons ou entendons à travers nos sensations, en réalité se cache un objet complexe qui au lieu de résulter de nos sensations est le produit de notre vision et imagination. La perception du monde autour de nous ne se limite donc pas à ce que nous voyons ou entendons à travers nos sens, puisque en réalité nous pouvons leurs attribuer d'autres qualités et significations.

En ce qui concerne l'apprentissage, on ne peut pas réduire l'expérience de l'école et de l'étude à une transmission codée d'informations (d'ailleurs la notion même d'information, qui s'est diffusée suite à l'essor de la cybernétique et de la théorie de l'information, n'est pas dépourvue d'une ambiguïté et confusion conceptuelle lorsqu'elle est utilisée dans divers domaines des sciences naturelles et sociales, par exemple en biologie). L'école est un lieu primordial où devrait se former le logos, la pensée rationnelle de tout individu et aussi la personne en tant qu'être relationnel et social. Elle est une expérience éducative et humaine qui dès le début requiert une « immersion » dans un espace et un temps qui ne sont nullement ceux du monde digital et de la réalité (artificiellement) virtuelle, aplaties sur la seule dimension d'un espace linéaire et automatisé qui repose sur une logique binaire et sur un présent toujours égal à lui-même et absolu. L'apprentissage et la formation de la pensée ont besoin d'un espace physique (corporel) et d'un espace interne, nécessaires pour murir l'imagination et faire bourgeonner l'intuition ; d'un temps scandé par une durée psychique et perceptive ; d'un temps intérieur lent et songé pour permettre la compréhension et la mémorisation. L'éducation et l'étude se nourrissent constamment d'une présence et d'une réflexion pluridimensionnelle qui, tout en admettant la limite (le doute, l'erreur et le paradoxe) comme un élément essentiel de l'apprentissage, ces dimensions sont projetées vers une recherche de l'infini comme concept idéal (comme vision mouvante de la pensée), et de l'inconnu comme horizon changeant du sens et du possible.

La vision de la science comme rébellion contre l'autorité, mais aussi contre

la misère et les inégalités sociales, contre les guerres, les armements et le conflit nucléaire, contre les injustices et la destruction de la planète, a été exprimée avec une très grande clarté dans une conférence tenue à Cambridge le 4 février 1923 à la *Society of Heretics* (ensuite parue dans un essai intitulé *Daedalus or Science & the Future*), par le généticien J. B. S. Haldane. Le passage suivant exprime bien la vision qu'avait Haldane du rôle du scientifique : « Plus que tout autre domaine, la science non seulement accorde plus de place à la raison, mais avec elle, encore plus qu'avec la politique, la philosophie ou la littérature, on peut changer le monde. (…) Nous devons donc considérer la science selon trois points de vue. D'abord, comme activité libre des fantastiques facultés humaines de la raison et de l'imagination. En deuxième lieu, comme réponse d'un petit nombre de personnes aux revendications de richesse, confort et succès par la majorité, qu'elle saura exaucer uniquement en échange de paix, de sécurité et de stabilité. Enfin, comme conquête graduelle de la part de l'homme d'abord de l'espace et du temps, puis de la matière en soi, puis de notre corps et de celui des autres êtres vivants, e enfin des éléments maléfices et obscurs cachés dans son profond antérieur (dans son âme) ».

Aujourd'hui on est en présence essentiellement de deux logiques. La première, désormais attaquée de toute part, est une logique de la raison et de l'imagination, qui a besoin de silence, de l'écoute et de la discussion ; elle exalte et reconnait la valeur de la réflexion et de la pensée critique, la place de l'individu dans l'étude et la compréhension, selon l'invocation de Saint Augustin « in te ipsum redi ». Il s'agit d'une logique qui analyse et approfondie ; elle est fondée sur la mémoire du précédent et comprend ce qui analyse et interprète sur la base de l'antécédent, et fait appel à l'intuition pour comprendre la réalité visible et invisible et pour concevoir le possible. À l'opposé, il y a la logique de la télévision, des médias et des réseaux sociaux, laquelle n'a aucune des qualités antérieures. Elle frappe l'individu avec la puissance de l'image de synthèse et le bombarde avec un essaim incessant d'informations hybrides et creuses, les premières l'hypnotisent, les secondes l'étourdissent. C'est une logique qui n'a besoin ni du passé ni du futur, car, en effet, elle est complètement écrasée sur l'immédiat, suspendue dans le présent et ne vibre que dans l'instant. Elle donne l'illusion de pouvoir offrir, au lieu d'une individualité complexe et cohérente, une personnalité multiple, mobile, serviable, qui s'adapte facilement et cependant prétend tout (aucun droit ne peut pas lui être refusé !)

Nous avons un grand défi devant nous : remettre l'humain au cœur de la vie ; préserver et développer l'intelligence, l'imagination et la sensibilité humaines. Baudelaire écrivait : « Ne méprisez la sensibilité de personne. La sensibilité de chacun, c'est son génie ». Le premier acte d'une authentique rébellion consiste à promouvoir des formes de vie émancipatrices de l'homme, de résister à toute tentative de le dominer et l'asservir ; de refuser le pourvoir nuisible de certaines technologies numériques qui génèrent dépendance et empêchent le développement de l'esprit

critique. La « vraie » rébellion aujourd'hui consiste à se réapproprier des réels espaces d'étude et de labeur, dans les écoles et à la campagne, comme dans d'autres lieux de travail ou à la maison. Et également du temps à dédier à la réflexion et à la discussion et aussi au silence où de nouvelles idées et dispositions d'esprit peuvent naître. Elle consiste à cultiver une pensée autonome et à donner impulsion à sa libre expression. La « vraie » rébellion est défendre et connaître la complexité et diversité de la nature, de l'homme et de ses mieux et milieux matériels et immatériels. Elle consiste également à pratiquer le pluralisme scientifique, philosophique et artistique face au pouvoir de la pensée unique et à de nouvelles formes de censure, parfois plus déguisées et perfides que celles pratiquées naguère. Il n'y a pas de rébellion sans une lutte contre la stupidité et l'insignifiance.

À la logique de la globalisation il faut opposer la logique de la diversité et complexité biologique et culturelle des individus et des communautés (les uns existent si les autres existent, et réciproquement) ; à la logique du marché et de la finance il faut opposer la logique de la coopération et du mutualisme ; à la logique du productivisme (ou de la croissance illimitée) et du profit il faut opposer la logique d'un juste équilibre entre l'homme et la nature, entre ses besoins et les capacités régénératrices des ressources naturelles disponibles, c'est dire de la sobriété ; à la logique qui poursuit la réduction de l'homme à une machine il faut opposer la logique d'un nouvel humanisme, où la place de l'homme dans la nature n'est plus d'être, selon une conception totalement anthropocentrique, le plus grand prédateur et consommateur de biens matériels et immatériels, mais d'être le plus grand défenseur et libérateur, suivant un esprit de connaissance, transformation, créativité

et affectivité, de la nature dans toutes ses formes et manifestations, du paysage comme microcosme naturel et milieu anthropique avec l'extraordinaire variété de ses stratifications historiques, architecturales et culturelles.

La vraie résistance n'est pas seulement une lutte contre un ennemi ou les envahisseurs, mais elle doit être d'abord et surtout une lutte pour un renouvellement profond dans la société dans laquelle on vit.

Il faut aujourd'hui résister à toutes les usurpations, mensonges et tentatives pour asservir les individus à un pouvoir cynique, corrompu, irresponsable et indifférent vis-à-vis des besoins réels des êtres humains, où par "résistance" il faudrait entendre un acte conscient et noble de courage, d'autonome et d'émancipation. Résister, c'est aussi s'engager, par les idées et les actions, dans un combat contre les injustices et les inégalités sociales, contre ceux qui tyrannisent d'autres êtres humains et contre les destructeurs de mondes, que ce soit des écosystèmes, des cultures, des langues ou des pratiques anthropologiques. Un combat également contre les grands monopoles financiers et du numérique mondiaux dont le projet est celui de réduire les êtres humains à des "clients" (adeptes du marché global) et de les transformer en "machines intelligentes" à travers une mutation inédite et irréversible de leurs circuits neuronaux et processus cognitifs. On veut aussi réduire et standardiser et de plus en plus la consistance et le sens de notre monde, de celui où fécondent et murissent la pensée critique et l'autonomie mentale, nos capacités de pouvoir réfléchir et agir sans être constamment soumis à des conditionnements publicitaires et aux manipulations médiatiques, bref à la barbarie des ragots et des vacarmes, à une information dégénérée. Cette réduction touche aussi la possibilité de participer réellement aux décisions qui nous concernent directement en tant qu'individus et membres d'une communauté, ainsi que des espaces vitaux comme ceux de la lecture et de l'écriture, des relations sociales, des choix de l'imagination, du jeu et du silence. On mentionnera enfin le bouleversement toujours plus rapide de nos rythmes temporels, soit physiologiques que cognitifs et émotionnels, dans une société qui a fait de la vitesse l'un de ses principaux modèles et bouts, avec la consommation individualiste et privée, l'automatisation des fonctions et l'annihilation des capacités critiques et imaginatives de l'homme.

Il y a plusieurs façons de résister, mais il y en a deux qui nous semblent être les plus essentielles et opérantes : premièrement il faut refuser d'obéir aveuglement à des décisions que nous considérons insensées et injustes ; deuxièmement, il ne faut pas faire ce qu'on estime être nuisible et contraire aux prérogatives essentielles de l'être humain.

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Runaway Male Fantasies: A Cybernetic Interpretation of Becoming-Fascist

Julie Van der Wielen

Abstract:
This article offers a cybernetic interpretation of the role the imagination plays in fascism. First, I address Deleuze and Guattari's response to Reich, who according to them adequately poses the problem of fascism by asking how the masses came to desire their own repression, but who supposes two distinct realities — the rational socio-economic reality and the irrational sexual or psychic reality of desire — thus reintroducing the idea of deception into his explanation. Then I discuss how, in contrast to this, Deleuze and Guattari, and later Theweleit, focus on fantasies and on groups in order to account for fascist desire. Drawing on Bion's group dynamics, I discuss Guattari's distinction between the subjected group and the subject-group, which he associates with two different group fantasy functions, and I show that in the subjected group, group fantasies take on a repressive function of cybernetic totalisation, which can be considered as microfascist and proto-totalitarian. The relation between microfascism and molar fascism remaining somewhat unclear in Deleuze and Guattari's writings as well as in Theweleit, I end by suggesting that we can account for this relation by looking at it as a runaway process, where existing, segregative and homogenising microfascist tendencies are reinforced through positive feedback originating from cultural productions like speeches, propaganda, popular songs and literature, etc., which produce redundancies and resonance with the existing system. When this kind of aberrant process goes together with and exacerbates a culture of repression, which blocks out many of the pathways for desire, it tends to develop into a violent line of abolition, where the only possible desire left is the desire for death and destruction.

Keywords: *Fascism, microfascism, group fantasy, Deleuze and Guattari, Klaus Theweleit*

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Résumé :
Cet article propose une interprétation cybernétique du rôle que joue l'imagination dans le fascisme. Tout d'abord, j'aborde la réponse de Deleuze et Guattari à Reich, qui, selon eux, pose de manière adéquate le problème du fascisme en se demandant comment les masses en sont venues à désirer leur propre répression, mais qui suppose deux réalités distinctes — à savoir la réalité socio-économique et la réalité sexuelle ou psychique du désir — réintroduisant ainsi l'idée de déception dans son explication. Ensuite, je montre comment, en réponse à Reich, Deleuze et Guattari, et plus tard Theweleit, se concentrent sur les fantasmes et sur les groupes afin d'expliquer le désir fasciste. En m'appuyant sur la dynamique de groupe de Bion, j'aborde la distinction entre groupe-sujet et groupe assujetti, que Guattari associe à deux fonctions différentes du fantasme de groupe, en démontrant que dans le groupe assujetti, le fantasme de groupe fonctionne de manière répressive, en opérant une totalisation cybernétique microfasciste et proto-totalitaire. La relation entre microfascisme et fascisme molaire restant quelque peu floue dans les écrits de Deleuze et Guattari ainsi que chez Theweleit, je termine en suggérant que l'on peut rendre compte de cette relation en la considérant comme un processus cybernétique de dérapage ou de fuite, où les tendances microfascistes existantes, ségrégatives et homogénéisantes, sont renforcées par une rétroaction positive provenant de productions culturelles telles que les discours, la propagande, les chansons et la littérature populaires, etc., qui produisent des redondances et des résonances par rapport au système existant. Lorsque ce genre de processus aberrant s'accompagne d'une culture de répression et l'exacerbe, bloquant les voies au désir, il tend à se développer en une ligne violente d'abolition, où le seul désir possible restant est le désir de mort et de destruction.

***Mots clés** : Fascisme, microfascisme, fantasme de groupe, Deleuze et Guattari, Klaus Theweleit*

Given the current political climate, this article proposes an exploration of the role the imagination plays in fascist power formations. While much attention has been paid to the manipulation of emotions and desires in fascist regimes, the role of the fascist imagination remains underexamined — this seems crucial today, given the pervasive role of visual culture and digital media in shaping individual and collective consciousness. An important exception to this is Klaus Theweleit's two-volume work, *Male Fantasies* (2003 [1977], 1996 [1978]), which illustrates the crucial role of fantasies in German fascism. On the basis of pieces of popular literature written by *Freikorps* and Nazist writers, Theweleit shows how elements such as a repugnance

of womanhood and fantasies around masculinity, military culture, violence, and authority constituted a destructive fascist imaginary world. As we will see, these fascist male fantasies strongly resonate with what we can observe in the so-called manosphere today (see for example Sugiura 2021).

Theweleit's analyses have a lot in common with those of Wilhelm Reich as well as with those of Gilles Deleuze and Félix Guattari (whom he profusely cites). Most notably, like them, he does not content himself with considering that the masses were deceived by fascist power, but attempts to account for why people *desired* fascism (Reich 1970 [1933]: 19–25, 35–6, 115; Theweleit 1996: 349; Deleuze and Guattari 2000 [1972]: 38). In other words, he takes the seemingly "irrational" aspects of fascism seriously, and refuses to reduce them to the influence of an external reality, like the power of suggestion of the fascist leader. What is more, he does not reduce fascism to an historical phenomenon, which would be reducible to a political regime or form of government, and explicable through socio-economic factors (notably Reich 1970: 22–8, 79–80; Theweleit 2003: 221, 352). Theweleit rather considers fascism as a psychic constellation, which is continuus with the "normal" psyche, in such a way that proto-fascist tendenies do not necessarily imply a full-blown political fascism. Just like Deleuze and Guattari, he believes that, at the core of fascism, there is a desire for death and destruction (see notably Theweleit 1996: 386 and Deleuze and Guattari 2005 [1980]: 231). This view differs from Reich's — as well as from that of Horkheimer and Adorno, for example — notably because it does not consider identification with the leader to be a pivotal aspect (Theweleit 1996: 413) and tends to downplay the role of Oedipus and of authority (see notably Reich 1970: 30-1 and Theweleit 2003: 222). Instead, this view focuses on examining pre-Oedipal mechanisms, such as mechanisms for the generation of self-cohesion, and fantasies of destruction, inspired by Melanie Klein (Theweleit 1996: 216–7).

I propose to contribute to existing efforts to understand and resist fascism from a Deleuzoguattarian perspective (notably Protevi 2000 and Braidotti and Dolphijn 2022 and Massumi 2025a and b), by shedding light, not so much on the content of the fascist imaginary, as Theweleit does, but rather on the way in which imaginary formations *operate* in the fascist collectivity. In order to do this, I will first briefly address Deleuze and Guattari's response to Reich, whom they applaud for having adequately posed the problem of fascism, by recognising that the masses must somehow *desired (their own) repression*, but whom according to them reintroduces the problem of deception that he was trying to avoid, because of his notion of irrational desire. Then, I will discuss how Deleuze and Guattari, and following them Theweleit, depart from a different psychoanalytic perspective in order to analyse fascist desire, emphasising the pre-Oedipal psychic reality and the role of (group) fantasies. I will address Guattari's distinction between two kinds of groups, namely subjected groups and subject-groups, with their corresponding two kinds of group fantasies, which function in a different way. Relating this distinction to observations

of the group dynamist Wilfred Bion, I will demonstrate that the role of imaginary formations within subjected groups can be described as micro-fascist and proto-totalitarian, as they generate a cybernetic-like process of totalization and repression. I will end by proposing a cybernetic interpretation of the relation between this kind of microfascism and molar fascism — whose relation remains somewhat unclear in Deleuze and Guattari, which makes them unable to explain molar fascism. I will supplement their explanation — which rests upon the notion of the line of abolition and the idea of redundancy and of an all too-sudden destratification (Deleuze and Guattari 2005: 165, 230–1, 503) — and argue that we should understand this as a runaway process, where the group phantasy and the repressive, micro-fascist desire of a subjected group are reinforced through positive feedback — engendered by the content of speeches, literature, propaganda, and other media — leading not to a productive line of flight capable of transformation, but to a deadly line of destruction and abolition, which produces a sudden destratification.

In this way, this article offers a new synthesis of psychoanalysis, Deleuzo-Guattarian thought, and cybernetic theory to demonstrate how the notion of feedback provides a more precise account of the rise of fascist formations. Through the exploration of how media content affects the unconscious and the collectivity, this will also shed light on the relation that researchers have revealed between far-right and fascist ideologies and the contemporary male and misogynist imagination, and particularly on the role (digital) media play in this context.

Thinking Fascism With and Beyond Reich

Wilhelm Reich was one of Freud's disciples, who was also of Jewish descent. He wanted to show the socio-economic origins of mental suffering, and can thus be called one of the founders of Freudo-Marxism (see for example Plon and Roudinesco 2000: 905–10 and Theweleit 2003: 223–4). In Deleuze and Guattari's appreciative words, "Reich was the first to attempt to make the analytic machine and the revolutionary machine function together" (Deleuze and Guattari [hereafter: DG] 2000: 38). His political views led to his eventual exclusion of the International Psychoanalytic Association, whose members were quite conservative politically. Moreover, they believed that Reich was schizophrenic and did not appreciate his unconventional approach, which combined traditional analysis with tactile, bodily intervention. He did this because his observations led him to associate neurosis with a stiffness or rigidity in the body — like an armor — which could be loosened, to the advantage both of the sexual energy or flow and of the speech therapy.

This idea of a sexual or vital energy — or desire — which streams or flows (see notably Reich 1993 [1927]), is taken up by Deleuze and Guattari and Theweleit, who associate it with schizophrenia (DG 2000: especially 292 and Theweleit 2003: 249–51, 254). Deleuze and Guattari also follow Reich in the role he ascribes to the family, which combines social and psychic or sexual repression. Indeed, Reich

already noted that "[t]he interlacing of the socio-economic structure with the sexual structure of society and the structural reproduction of society take place in the [...] authoritarian family [...] the factory in which the state's structure and ideology are molded" (Reich 1970: 30). Deleuze and Guattari add that, because of its focus on Oedipus as a mechanism of psychic rather than social repression, psychoanalysis is able to ignore social repression, which makes it politically conservative and reactionary (DG 2000: 117).

Deleuze and Guattari further praise Reich for having asked the right question in relation to fascism — a Spinozist question that they consider fundamental to political philosophy: "'Why do men fight for their servitude as stubbornly as though it were their salvation?' How can people possibly reach the point of shouting: 'More taxes! Less bread!'?" (*Ibid.* 38). Reich indeed affirms that "fascism is to be regarded as a problem of the masses" (Reich 1970: 98). What is more, he refused to accept any explanation that relied on the idea that these masses were deceived, as Marxists tend to believe: the people must somehow have desired repression and fascism (*Ibid.* 19–25, 35–6, 115; Deleuze and Guattari 2000: 118). According to him, "[t]o stress this guilt on the part of masses of people, to hold them solely responsible, means to take them seriously" (Reich 1970: 345). It is this problem, namely the question why or how the masses ended up desiring fascism, which Reich explores in his *The Mass Psychology of Fascism*, and which Deleuze and Guattari take up again in *Anti-Oedipus*, as they are not fully satisfied with Reich's theory. According to them, Reich's explanations "amount to a reintroduction of the error or the illusion" (*Ibid.* 119; Theweleit agrees with this and cites a long passage of Deleuze and Guattari, see Theweleit 1996: 416–7). In other words, while Reich aims to explain how the masses could possibly desire fascism without being manipulated, his explanation nevertheless still seems to rely on the idea of deception. This critique can seem somewhat severe, especially considering Reich's effort to take desire seriously, but I will show in what sense it seems warranted. We will also see that Deleuze and Guattari's objections are connected to Reich's distinction between sexual economy and socio-political economy, which in their view constitute one and the same economy.

According to Reich, "fascism [...] is a concept denoting a very definite kind of mass leadership and mass influence: authoritarian, one-party system, hence totalitarian, a system in which *power takes priority over objective interests, and facts are distorted for political purposes*. Hence, there are 'fascist Jews,' just as there are 'fascist Democrats'" (Reich 1970: 213–4; my emphasis). In Nazi Germany this further implied an "intensive identification with the führer" which "concealed one's real status as an insignificant member of the masses" (*Ibid.* 80). In this context, the authority, success, and power of the leader must have been conveyed to him by the masses themselves, and not be derived from some manipulatoin of the leader himself or from some transcendent reality (Reich 1970: 40). This idea resonnates with Theweleit's obervation (Theweleit 1996: 408–10) about how Hitler appeared

somewhat clumsy or even ridiculous, but that this seemed to be intended. This made the *Führer* approachable; it made him look like "one of us." This further means that, if he was regarded as flawless and as standing above all critique, this is because his soldiers and other followers *wanted him to be so*. "The *Führer* is, or, rather, is required to be, flawless; but, unlike the Pope for example, his flawlessness is no gift from the heavens. It is a desire on the part of his subordinates, who derive security from the knowledge that he is above criticism" (*Ibid.* 410).

The question arises as to why the masses were drawn to this form of leadership. Reich posits that "the lower middle classes [...] constituted the *mass basis* of fascism" (Reich 1970: 6). He further explains this through their "character structure" which according to him "*reproduces the social structure of society in the form of ideologies*" (*Ibid.* xii). He argues that

> "fascism" is only the organized political expression of the structure of the average man's character [...] Viewed with respect to man's character, *"fascism" is the basic emotional attitude of the suppressed man of our authoritarian machine civilization and its mechanistic-mystical conception of life. It is the mechanistic-mystical character of modern man that produces fascist parties, and not vice versa* (*Ibid.* xiii).

In short, for Reich, the fascist mentality is the mentality of the suppressed man, who is at the same time rebellious and in need of authority, and which is the man that our mechanised and patriarchal civilisation has produced (*Ibid.* xv, 281). In this context, Reich emphasises that fascism is not confined to specific races or nations but is rather international and anhistorical. This perspective resonates with Deleuze and Guattari's concept of microfascism (notably DG 2005; see below), as Reich contends that every individual harbors elements of fascism within themselves.

Reich sets out to explain how the character stucture of the suppressed man allowed fascism to emerge. According to him, at the time of the rise of fascism, they lived in a "machine civilization" because they had a lot of faith in and use of machines, as well as a mechanistic view of life and of the economy (Reich 1970: 31, 58, 335–41) — which is arguably still the case today. This was combined with a certain authoritarianism, in the sense that people were incapable of freedom and thus dependent on authority (*Ibid*. xxvii). Reich relates this authoritarianism to the patriarchal structure of society and with the nuclear family. According to him, the "*authoritarian structure* [...] *is basically produced by the embedding of sexual inhibitions and fear in the living substance of sexual impulses*," which happens in the family, in such a way that "the family is the authoritarian state in miniature" (*Ibid*. 30). In this context, the role of the father mirrors the political and economic authority of the state, and the family becomes a key instrument of authority, that is, of psychic, sexual, and social repression, which foster helplessness, dependency, and

an attitude of submission to authority. This process further requires an identification with the father. In this way, it lays the foundation for identification with and dependency on other authority figures, such as the political leader. It is interesting to note, with Reich, that such a structure can lead to neurosis, as the repression of sexuality and the obsession with maintaining notions of honor, duty, and self-control become emotionally charged, pathological constructs (*Ibid*. 53–6). This authoritation structure also forms the basis for nationalism and for a more or less intense identification with the fascist leader.

Indeed, as Reich writes, "[t]he more helpless the 'mass-individual' has become, owing to his upbringing, the more pronounced is his identification with the führer, and the more the childish need for protection is disguised in the form of a feeling at one with the führer. This inclination to identify is the psychological basis of national narcissism" (*Ibid*. 63). Reich explains what he calls "*the irrational core of nationalism*" (*Ibid*. 56, italics mine), by relating feelings of nationalism to the idea of a moral privilege — or supremacy — rooted in the authoritative position of the state and of officials who identify with power (*Ibid*. 46–7). He describes how national honor becomes a primordial value, alongside the personal and family honor, and he notes the connection to capitalist values and patriarchy. In this context, the structure of Oedipus transforms into a reactionary, nationalist social force: the needs of the family mirror those of the nation, while compelling the nation to expand and confront its enemies. What is more, because the leader also offers protection, he assumes a father-like role. In this way, the national leader comes to embody at the same time the nation and the paternal figure, which produces in the people a strong emotional bond with him. It is interesting to already note that this resonates with Wilfred Bion's idea of a basic assumption of some groups, who need a leader or father figure to hold them together, like a helpless organism (Bion 2004 [1961]: 74, 147).

According to Reich, because of the tendency among workers to increasingly adopt bourgeois values, in a shift away from revolutionary ideals and social responsibility — of which the devaluation of manual labour and the bureaucratization of the workers' movement were symptoms — the psychological structure of the workers would also have become receptive to this kind of "conservative structuralization" (*Ibid*. 74). This enabled fascism "*to exploit the masses' disappointment in Social Democracy and their 'rebellion against the system' for its own narrow purposes*" (*Ibid*., italics mine).

Reich also observes a mystical dimension to the character structure of his contemporaries (*Ibid*. 28): this dimension facilitaties the repression of sexuality and implies a certain ascetism, in the name of religion, ethics, or simply civilisation. This sexual repression, which as we have seen happens mainly in the authoritarian, patriarchal family acccording to Reich, is an important element, as "sexual inhibition changes the structure of economically suppressed man in such a way that he acts, feels, and thinks contrary to his own material interests" (*Ibid*. 32). This repression

makes people helpless: it makes them unable to think properly, and it encourages unhealthy abstinence (*Ibid*. 125–8). It makes them replace sexual excitations with other excitations, like religious ones, which make them dependent and fearful (*Ibid*. 146–51). According to Reich, producing a mystical structure in masses of young men means producing in them an unconscious or repressed longing for orgasm (*Ibid*. 168–9). Because of the ascetic aspect of the structure, this desire is intensified, turning sexuality into something brutal and sadistic, which degrades and enslaves women — this kind of unhealthy sexuality becomes the norm (*Ibid*. 88–9, 105–11).[1]

What is more, as the common man's self-confidence is degraded because of this unhealthy sexuality and sensuousness, he becomes accessible to reactionary values such as purity, honor etc., and adopts defensive and reactionary attitudes, like the nationalist one. He becomes unable to master his sexual forces — which become all the more stronger when he tries to resist them — hence in need of rigid containment. This constitutes the perfect soil for a fascist movement able to use and sustain this distorted sexuality, these homosexual and sadistic feelings, and this ascetism (*Ibid*. 192).

Indeed, for Reich the distorted idea of sexuality as "dirty and sensual" (*Ibid*. 100) also opens the way to irrational ideas around racial purity — according to Reich this is not only the case in Germany, but something similar happened in the United States. What is more, we should see the National Socialists' imperialism and their economical programme as an extension of their purist racial theory of Aryan supremacy, which is used to justify imperialism and war (*Ibid*. 75–8, 81–2). As we will see, the motif of gender inequality and the repression of women will become even more central in Theweleit's analyses, where it will also be related to racism. According to Reich, this theory is irrational and contains contradictions, notably the idea of racial purity which is nonsensical and unrealistic, but it is exactly because it is irrational that it works: it gives "expression to certain *unconscious* and *emotional* currents prevalent in the nationalistically disposed man and of concealing certain psychic tendencies" (*Ibid*. 78).

It will have become clear to the reader why Deleuze and Guattari affirm that Reich reintroduces the idea of illusion or error, of manipulation or deception, in his explanation of fascism through an analysis of the unconscious character structure of the masses. This explanation indicates how emotions and the unconscious can prevail over rational arguments (*Ibid*. 34) and, consequently, how the irrational content of slogans can have such an impact (*Ibid*. 129) or how, more generally, propaganda can count on profound irrational feelings in order to influence people, without revealing its true intentions (*Ibid*. 104). In other words, what Reich's theory

[1] In this context, Reich describes something akin to Bateson and Deleuze and Guattari's double bind: he describes how, through the mystical and authoritarian structure, people are made to believe that they must choose between on the one hand, a brutal sexuality or, on the other hand, an ascetic and compulsive sexual morality — in religious terms: God and saviour *or* sexuality (Reich, 1970: 111, 161–2).

explains is *how fascism was able to deceive the masses*. In Reich's own words: "[t]he insights we gain from character-analytic treatment [...] reveal the contradictions, forces, and counter-forces in the average individual" (*Ibid*. 180), and they show how "*They [the masses] had grossly deceived themselves and were defeated by their own irrationalism, i.e., their fear of social responsibility*" (*Ibid*. 228). Even if this deception is partially internal, or embedded in the collective psyche's mysticism and irrational desire, rather than solely caused by external manipulation, we can still speak of deception and manipulation here.

According to Reich, the masses were manipulated by Hitler because his national-socialism was not in their true, *material* and *social* interests. National Socialism was "not, as is commonly believed, a purely reactionary movement" but "it represent[ed] an amalgam between *rebellious* emotions and reactionary social ideas" (*Ibid*. xiv). In other words, Nazism relied on a revolutionary will, which was directed against capital. This was exploited by the fascist machine, which echoed communist propaganda, using revolutionaly emotions and symbols, the colour red, etc. (*Ibid*. 98–103), making people believe that Hitler was not a capitalist but a socialist — "the German Lenin" (*Ibid*. 99). According to Reich's sex-economic theory, if we would be able to eliminate sexual repression, then a social revolution would be possible: "Freed of its bonds and directed into the channels of the freedom movement's *rational goals*, the psychic energy of the average mass of people excited over a football game or laughing over a cheap musical would no longer be capable of being fettered" (*Ibid*. 32–3, my italics).

So, as Deleuze and Guattari note, there is in Reich a dualism between economic rationality and social responsibility on the one hand, and irrational desire, repressive ideology and phantasies on the other, where the former, rational objectives can be deceived through the latter (DG 2000: 38–9, 118–9, 257, 344–5 and Theweleit after them, 2003: 220). In this context, the task of psychoanalysis is to deal with psychic suffering and sexual repression, which would pave the way to social responsibility and freedom, the latter of which would require efforts of a different nature (notably Reich, 1970: 19). For Deleuze and Guattari, in contrast, "desiring-production is one and the same thing as social production" and "[i]t is not possible to attribute a special form of existence to desire, a mental or psychic reality that is presumably different from the material reality of social production" (DG 2000: 39). This is why, "[a]s opposed to Reich, schizoanalysis makes no distinction in nature between political economy and libidinal economy" (*Ibid.* 381). According to Deleuze and Guattari, there is only one desiring production, which is both psychic and social.

Because of this discrepancy, Deleuze and Guattari are not entirely satisfied with Reich's theory about the rise of fascism, which still implies that the people were deceived. We can add to this that, in Reich, it is not so clear how the masses could have been so unified, how the individuals could all have had exactly the same Oedipal and authoritarian desires and dispositions, and all have reacted to the authoritarian

patriarchy in the same way. Indeed, Reich's concept of "the structure of the masses" in its collective aspect, remains somewhat vague, as he transitions all too quickly from a specific "psychic structure" or "character structure" (Reich 1970: notably 14, 16, 18–9, see also Reich 1972 [1933]) — the unconscious framework of individuals that influences their behavior and dispositions — to "class structure" (*Ibid.* 49, 54, etc.) and "mass structure" (*Ibid.* 5, 20 34, etc.). The question arises whether this "mass structure" is merely the individual structure shared by the individuals forming these masses — each having the same configuration — or if the fact that this structure is collectively shared changes something within the individuals and participates in the formation and cohesion of the collective, and in what manner.

In their schizoanalysis, Deleuze and Guattari connect libidinal and political economy into a single framework. For them, Oedipal desire, and the related Lacanian definition of desire as lack (see notably Lacan 2006 [1966]: 680), is not the fundamental or universal form of desire, and also not a merely individual structure of psychic economy but inherently collective and socio-political. Indeed, this kind of deisre is produced by social organisation and domination: "The deliberate creation of lack [...] is the art of a dominant class. This involves deliberately organizing wants and needs (*manque*) amid an abundance of production; making all of desire teeter and fall victim to the great fear of not having one's needs satisfied" (DG 2000: 28). In what follows, I will shed light on how the *socius* can produce this kind of desire by exploring Guattari's insights on two types of groups and group fantasies, which show that group fantasies can sometimes operate in a repressive manner, according to a cybernetic-like logic of totalisation.

Microfascism and Totalising Group Phantasies

As we have seen in the introduction, in Theweleit and Deleuze and Guattari's reflections on fascism, the identification with the leader — and thus the authoritarian structure or Oedipus — does not play such an important role. According to Deleuze and Guattari, Oedipus is merely a sham or a trap (DG 2000: 115–6): we do not really desire our mother before the incest prohibition and the Oedipal structure is imposed upon us (*Ibid.* 100–1, 113–7). Deleuze and Guattari thus denounce the psychoanalytic tendency to always interpret everything through Oedipus (*Ibid.* 14, 52–6, 100–1), which contributes to and maintains social repression, while pretending that it is merely individual, psychic repression. Accordingly, for them it seems more useful to look at fascism through an analysis of group organisation or functioning.

Theweleit's analyses confirm the idea that fascism would benefit from an analysis through the functioning of groups rather than through Oedipus. According to him, we cannot reduce or extrapolate fascist desire from this structure, that is, from a desire for an incestuous relation with the mother and from the fear of castration that would result from this. He writes:

> For the men we are dealing with here, there is no such end. They want something other than incest, which is a relationship involving persons, names, and families. They want to wade in blood; they want an intoxicant that will "cause both sight and hearing to fade away." They want a contact with the opposite sex — or perhaps simply access to sexuality itself — which cannot be *named*, a contact in which they can dissolve themselves while forcibly dissolving the other sex. They want to penetrate into its life, its warmth, its blood. It seems to me that they aren't just more intemperate, dangerous, and cruel than Freud's harmless "motherfucker" Oedipus; they are of an entirely other order. And if, in spite of everything, they have a desire for incest, it is, at the very least, with the earth itself ("Mother Earth"). They are far more likely to wish to penetrate "her" in some violent act of "incest," to explode into and with her, than wish themselves in the beds of their flesh-and-blood mothers.
>
> Here we are faced with something that cannot be subsumed under the heading of "Incest," or the concept of "object relations." What we have here is a desire for, and fear of, fusion, explosion. In parallel fashion, the fear of rifle women cannot (as we have begun to see) simply be reduced to the concept of "castration anxiety." What we encounter instead is a fear of total annihilation and dismemberment (Theweleit 2003: 205).

As this passage indicates, for Theweleit, pre-Oedipal and pre-objectal relations seem more important in understanding fascism than the Oedipal structure. This makes sense if we consider that fascism must necessarily be a movement, a collective phenomenon or a group-phenomenon, and that this has been related to a pre-Oedipal position by the pioneering group dynamatician Bion (Bion 2004: 6, 90, 141–2, 1635, 181–9).

Indeed, according to Bion's clinical observations, we should consider people's behaviour in groups from the point of view of what Melanie Klein calls the pre-Oedipal and pre-genital, paranoid-schizoïd position (Klein 1984a [1928, 1930]: 186-98, 233-5 and 1984b [1946]:1–24), which she associates with infants and psychotics. According to Klein, this position is characterised by partial drives and objects, such as oral drives directed toward the mother's breast, without perceiving the self or the mother as a whole person. This fragile, dissociated position generates feelings of frustration, hatred, anxiety, and persecution, and leads to defense mechanisms such as splitting (dividing objects and self into good and bad parts), the introjection of good objects and the projection of bad ones to external objects (hallucinatory gratification). In this mental phase or level, primitive fears and fantasies — such as

phantasies of destruction, ingestion, omnipotence, persecution, and mutilation — are prominent and not clearly distinguished from reality.

Bion notes that being in a group awakens such pimitive fears and anxieties in us, and makes us regress into this pre-Oedipal position, with its phantasies and defence mechanisms, which determine how the group acts. François Tosquelles, the founder of institutional psychotherapy, who had a great influence on Guattari, follows Bion in this (see Guattari, Oury, Tosquelles et al. 1961: 85; Guattari, Oury and Tosquelles 1985: 82, 186–90). As we will see, Guattari also seems to agree with Bion, even though he also seems to find the latter's view limited, in the sense that Bion only descibes what Guattari calls the "subjugated" or "dependent group" (Guattari 2015 [1972]). I will also focus on these latter here, and argue that we can associate them with microfascism.

Theweleit seems to agree with this focus on groups in an explanation of fascism, when he writes: "I part company with [...] one of the basic assumptions of all communist theories of fascism, including that of Wilhelm Reich [...] neither defensive fantasies nor paradigms for the transmutation of reality seem here to be class-specific" (Theweleit 2003: 89) and "Benjamin is right in saying that fascism may help the masses to express themselves, but that it certainly doesn't help them to gain their rights. We need to go one step further, though, and specify what is being expressed" (*Ibid.* 432). In one of his discussions of the fantasies of fascism and of what is being expressed in them, he mentions that we could ask whether they are the fantasies "of 'groups,' 'classes,' or 'individuals'" (Theweleit 1996: 350). He notes that "[t]he most unlikely scenario is that a fantasy becomes the fantasy of an entire class [...] The fact that communist theoreticians have met with disaster in constructing a class consciousness should give us food for thought" (*Ibid.* note 6). He mentions Deleuze and Guattari, and also Sartre, who has influenced Guattari's distinction between two kinds of groups, as has often been noted in the literature (see notably Antonioli 2023, Caló 2023, Dubois 2021).

Sartre distinguishes between two kinds of groups in his *Critique of Dialectical Reason* (Sartre 2004 [1960]: xxvi-xxx, *passim*). On the one hand, there is the series or seriality, which is characterised by passivity and inertia, and where "everyone is the same as the Others in so far as he is Other than himself" (*Ibid.* 260). He notably gives the examples of people listening to a radio broadcast (*Ibid.* 270–6), waiting for the bus (*Ibid.* 256–69), and of the economic market (*Ibid.* 277-92). On the other hand, there are groups in fusion, which Sartre associates with a common, revolutionary praxis. Here, "[t]he individual, as a third party, is connected, in the unity of a single *praxis* (and therefore of a single perceptual vista) with the unity of individuals as inseparable moments of a nontotalised totalisation" (*Ibid.* 374) and there is "a perpetual re-creation of *praxis* by the group" (*Ibid.* 298). He famously

gives the example of the storming of the Bastille (*Ibid.* 351–62).[2]

This distinction has inspired Guattari's own distinction between the subjected group and the subject-group (Guattari 2015: 64–8, 70–1, 77–9, 107, 118–9, 224–6, 230–1; Guattari also uses the terms dependent and independent group, or subject and object group), which he formulates in slightly different terms than Sartre's. For Guattari, the subjected group is defined externally; it follows a law or principle that it is subjected to from the outside. Because of this, it is unable to face alterity, nonsense, or its outside, and it does not tolerate change. This further makes it unable to be creative or therapeutic — or, in Guattari's terms, to have "access to desire" (*Ibid.* 68, 230). Guattari associates this with the psychoanalytic notions of castration and of the superego, as well as with stereotypical, empty, or banal utterances that are disconnected from the subject's desire (*Ibid.* 52). The subject-group, in contrast, is open and able to face alterity and its own finitude or ending. It is capable of change and able hear or to listen as well as to speak and to be heard. It is important to note that this is not an absolute distinction: these two dimensions are not mutually exclusive; they can both be present in the same group or a group can shift between them (*Ibid.* 77, 107).[3]

To achieve the emergence of a subject-group seems to be the aim of institutional analysis for Guattari. This has both a political and a therapeutic significance, and like Reich's theory and practice, institutional analysis has a Marxist or socio-economic as well as a Freudian or analytic dimension (see for example Guattari, Oury, Tosquelles et al. 1961: 11–4). It is also worth noting that, as a movement, institutional psychotherapy has a historical connection to resistance against fascism,

[2] It is interesting to note, with Fredric Jameson (in Sartre 2004: xxvii), that this points to an important difference between Sartre and Martin Heidegger, who was a member of Hitler's National Socialist party from 1933 onwards. Indeed, the conceptual distinction that Heidegger makes in relation to being-with-others between authenticity and inauthenticity (see notably Heidegger 1985 [1927]: 279–348) seems conservative — we could even say: fascist. This is because Heidegger associates authenticity with what he calls being-onto-death, as well as with conscience and duty. As such, this notion has a military ring to it, and it resonates with Reich's and Theweleit's descriptions of fascism. This is not at all the case for Sartre's distinction between seriality and groups in fusion, on the contrary: Sartre rather seems to associate seriality with the dominant classes, and we can associate the military to this concept of inauthentic, fallen or inert group-being, while the authentic and active group-in-fusion can be associated with a revolutionary *praxis*.

[3] As Susana Caló remarks, an important difference between Sartre and Guattari is that Guattari believes the institution can be creative and take the form of a subject-group, while Sartre does not think that institutions can be in fusion (Caló 2023: 291). I would like to argue that there is another difference with Sartre: It seems that a common *praxis* is not sufficient for the emergence of a subject-group in Guattari's sense, because this does not preclude the presence of (unconscious) mechanisms of alienation, such as the formation of leaderships or the reification of roles (Guattari 2015: 77–8). For Guattari, these mechanisms indicate that the group is subjected, and therefore we should learn to decipher and avoid them. In other words, it seems to me that Guattari would find that in Sartre the analytic dimension is missing. Indeed, he writes: 'Our concern is to determine the conditions that allow an institution to play an analytical role in the Freudian sense' (*Ibid.* 124). This is related to the notion of group phantasy, which will be addressed in the following pages.

as its founder, Tosquelles, opposed the Francoist regime and then endeavoured to resist the Vichy regime.

For Deleuze and Guattari, the Oedipal structure and class ideology should not be seen as something primary or universal, because they depend on the existence of something more fundamental, namely the abovementioned subjugated or dependent group: "it is not the forms of the subjugated group that depend on Oedipal projections and identifications, but the reverse: it is Oedipal applications that depend on the determinations of the subjugated group" (DG 2000: 103). According to the authors, the subjected group determines the libidinal investments of its members — which influences for example their pursuit of a certain career, their buying of certain goods or adhering to certain values — and it creates a feeling of "indeed being one of us" or, in other words, "a *segregative use*" of desiring production (*Ibid.*). This view constitutes a reversal of Reich's: Oedipus and class ideology depend on a segregative, nationalistic, religious, or racist sentiment, and not the reverse (*Ibid.* 104). This kind of segregative function of desire can further produce the feeling "of being part of a superior race threatened by enemies from outside" (*Ibid.* 103) — which is characteristic of fascism.

What is more, for Guattari, the organisation of a group has a lot do with the imaginary. More precisely, it has to do with how group fantasies operate within the group.[4] He indeed writes: "Organizing such a collective depends not only on the words that are said, but on *the formation of images underlying the constitution of any group, and these seem to me something fundamental — the support upon which all their other aims and objects rest*. I do not think one can fully grasp the acts, attitudes or inner life of any group without grasping the thematics and *functions* of its 'acting out' of phantasies" (Guattari 2015: 222; my emphasis). In the two volumes of *Male Fantasies*, Theweleit shows the importance of the content of fascist fantasies. However, the question *how* these fantasies could be so influential and be shared by the members of the fascist movement or ideology, and *how these fantasies operated* in relation to the collective dimension of this movement remains somewhat unclear. I hope to shed light on this through an analysis of Guattari's concept of the group phantasy of the subjected group, which, I shall argue, functions according to a logic of cybernetic modulation.

Guattari — and Deleuze after him — distinguishes between two kinds of group phantasy or "[t]wo group functions of the imaginary" (Guattari 2015: 224), which

[4] It is interesting to note that the concept of group fantasy constitutes an important distinction between Guattari's thought and that of his lifelong colleague and friend Jean Oury, the psychiatrist who founded La Borde, and who was also an important figure in institutional psychotherapy. Indeed, Oury did not believe in the existence of group fantasies, just like he did not believe in the distinction that Guattari makes between subjected and subject-group (see Oury and Depussé 2003: 230). This points to a more profound disagreement between the two men, which has a lot to do with their assessment of the status of psychoanalysis and of Lacan, with Guattari being much more critical about these than Oury.

correspond to "two different readings of this identity [between desiring production and social production ...] depending upon whether the desiring-machines are regarded from the point of view of the great gregarious masses that they form, or whether social machines are considered from the point of view of the elementary forces of desire that serve as a basis for them" (DG 2000: 30). In this context, it should be noted that according to Deleuze and Guattari, fantasy is always group fantasy, and never merely individual (*Ibid.*).

Guattari seems to associate the group fantasy of the subjected group to Bion's "basic assumptions" (Bion 2004), as he calls them "phantasies of a *particular* group" or "*basic* phantasies" (Guattari 2015: 228; my italics), while distinguishing the object of institutional analysis, or the subject-group from this (*Ibid.* 226 note 11). Bion infers the idea of basic assumptions from his clinical practice with groups. These assumptions correspond to very basic kinds of groups, or to basic "categories of mental activity" of groups (Bion 2004: 172), which derive from the paranoid-schizoid or the "proto-mental" level (*Ibid.* 101–5, 154), and which correspond to unconscious presuppositions about the group that individuals belong to and what unites them. Bion distinguishes three such assumptions: First, the dependent group and the basic assumption that there is a person or object, inside or outside the group, which sustains the group and provides it security, protection, and nourishment, on the material or spiritual level (Bion 2004: 74, 147). This group depends on a leader, like a fragile and immature organism, and its leader may be a concrete, existing person or an ideal or spiritual object, like a deity. Secondly, there is the fight-flight group, which gathers around an enemy that it constantly must fight or run away from, in such a way that, in this kind of group, paranoid and aggressive feelings thrive (*Ibid.* 73, 152–3). In the third place, there is the pairing group, which creates occasions for intimate, dual relations. In this way, this group makes it possible to address individual problems and it creates a hopeful atmosphere based on the idea that intimate relations will solve neurotic problems and help settle feelings of guilt (*Ibid.* 72, 150–2).[5]

[5] It is interesting to observe with Bion that, in our society, there seem to be specialised work groups that are devoted to dealing with problems of, and stimulating desires related to, the mentalities of the different basic assumption groups: the artificial groups that Freud describes (Freud 1949: 41–51), namely the Church and the Army, can be seen as responding, in an organised manner, respectively to the needs and anxieties of the dependent group and of the fight-flight group (Bion 2004: 136–7, 156–8, 167). Freud does not explicitly mention any artificial group that would accommodate the pairing group, but according to Bion this would be the role of psychoanalysis itself (*Ibid.* 167, 176). Indeed, psychoanalysis is characterised by an intimate, binary relation, a focus on libido and sexuality, and a hope of solving neurotic problems through this intimate relation. Bion further recognises in this kind of group a Messianic hope that should not be fulfilled (*Ibid.* 160–1, 187) — which is typical of Judeo-Christian religions — and he also associates it with the aristocracy, which ascribes great importance to marriage and reproduction (*Ibid.* 136, 158). We could also associate this with bourgeois culture, where marriage and reproduction are very important as well, notably because of the role they play in the conservation and allocation of property. This would be in line with Deleuze and Guattari's considerations on psychoanalysis, when they emphasise

According to Bion, groups can switch from one basic assumption to another, for example when the tension becomes too high and another kind of basic assumption provides relief. Furthermore, these assumptions are not usually conveyed verbally but through gestures, sounds, postures, intonation, etc. (*Ibid.* 70, 83). In other words, they are shared through a more primitive level of communication, which can be quite subtle, and which often does not correspond to what is verbally or consciously communicated. In this context, Bion observes that it is hard to convey things to the group that the group does not want to entertain, and that the group reinterprets contributions to suit its desires. For example, in a fight-flight group, only inimical, aggressive or paranoid contributions, such as feelings of hatred and suspicion, are truly heard and accommodated by the group, while other kinds of contributions are not really taken into account. Accordingly, we can associate Bion's basic assumptions with the dependent group: these assumptions correspond to a phantasy that is shared by the members of a particular group, which is about the group in question and which determines its behaviour. Through this kind of group fantasy, the group becomes subordinate to its own collective imagination, which thus functions as a totalising mechanism of regulation.

Indeed, Guattari remarks that a group phantasy can function like "a kind of collective currency" (*Ibid.* 226; see also Guattari, Oury, Tosquelles et al. 1961: 137–56). This is the case for Bion's basic assumptions, given that they define the individuals' behaviour and expressions or, more precisely, what is of value for the group, thus leading the group to interpret everything in these terms. As a result, we can consider the group phantasy or basic assumption as a medium of cybernetic totalisation — following the computational logic related to information and data processing, which understands and designs systems with feedback and control mechanisms — as the following quote by Bion suggests: "Group mentality is the unanimous expression of the will of the group, contributed to by the individual in ways of which he is unaware, influencing him disagreeably whenever he thinks or behaves in a manner at variance with the basic assumptions. *It is thus a machinery of intercommunication that is designed to ensure that group life is in accordance with the basic assumptions*" (Bion 2004: 66; my emphasis). Guattari describes the functioning of the group phantasy of the subjected group in a similar fashion: he mentions "a specific operation of misrecognition, consisting in the production of a kind of false windows that are group phantasms" (Guattari 2015: 77–8; translation modified) and "specific systems of resistance, misreading" because of which "they [group phantasies] are the seat of an entire series of clashes and impasses between the individual and the group" (*Ibid.* 130–1).

its bourgeois conception of sexuality; its emphasis on guilt, neurotic problems, and the intimate family; and the role of money and of the contract in its therapeutic practice (DG 2000: 49–50, 56, 64).

Because of the way its group fantasy functions, the basic assumption group, just like Guattari's subjected group, is unable to face alterity or change. Indeed, Bion remarks that this kind of group cannot be creative or therapeutic, and that it reacts to new ideas like the psychotic individual reacts to external objects according to Klein (Bion 2004: 156-9, 164 note 2). Guattari emphasises that dependent groups have a "totalizing character" (Guattari 2015: 70), which is expressed through "an unconscious function of social regulation" (*Ibid.* 105). This function of regulation can be related to the castration complex and neurotic anxiety in front of the superego, for which it forms the basis. It procures its members a certain sense of the absolute or of eternity, which allows them to hide from desire and death, as well as from nonsense or alterity, which is experienced as external (*Ibid.* 79, 119, 231). However, this comes at the price of repression and domination, given that this kind of group functions through a logic of generality, where everything is considered equivalent to everything while difference is neglected (*Ibid.* 324-5), which makes this group unable to recognise the singularity of events or of individuals and their desires (*Ibid.* 68, 109, 115–6, 131, 230). According to Guattari, something like this happens in fascist regimes, where the leader does not *actually* possess total control, but where "imaginary phenomena of pseudo-fallicization" (*Ibid.* 105) reinforce this power.

We can associate these controlling and regulating group fantasies with Deleuze and Guattari's later concept of microfascism (notably Deleuze and Guattari 2005 [1980]), which is not explicitly present in *Anti-Oedipus* yet, but which according to Deleuze and Guattari "provides an answer to the global question: Why does desire desire its own repression, how can it desire its own repression?" (*Ibid.* 215). [6] Indeed, the group fantasy of the subjected group indicates a mechanism by which desire comes to desire its own repression, through a cybernetic operation, which responds to desires of safety, belonging and segregation. Because of its repression of singularity, of what is different, in favour of an adherence to a certain group, we can call this function of the group fantasy microfascist, and we can call it proto-totalitarian because of its totalising logic.

It is interesting to note that Guattari associates Lacan's symbolic with this kind of cybernetic totalisation (Guattari 2015: 108). It is true that Lacan's notion of desire, which can only be accessed or expressed through the symbolic or through the Other, can be understood as cybernetic: Departing from and driven by an essential lack related to the object of desire, which is essentially unattainable, and a demand for love and recognition by the inaccessible Other, it constitutes a never-ending

[6] We could say, however, that this concept is already implicit or prefigured in *Anti-Oedipus*. Indeed, the notion of subjected group is present here, which can be associated to the concept of microfascism. Furthermore, a notion of microfascism can be discerned in Foucault's preface to the book, where he writes: "the major enemy, the strategic adversary [of the book] is fascism [...] And not only historical fascism, the fascism of Hitler and Mussolini — which was able to mobilize and use the desire of the masses so effectively — but also the fascism in us all, in our heads and in our everyday behavior, the fascism that causes us to love power, to desire the very thing that dominates and exploits us" (Foucault in DG 2000: xiii).

cycle, which continuously oscillates between these two, as a cybernetic circuit with feedback mechanisms (notably Lacan 2006: 6–48, 680–700). This explains why, according to Guattari, classical psychoanalysis is not useful to avoid this kind of totalisation, since "[a]nalytical interpretation [...] implies an exacerbation of this [totalising] procedure" (Guattari 2015: 71). From the perspective of schizoanalysis, desiring production does not necessarily operate in a cybernetic, totalising way: rather than being cybernetic, it is first and foremost machinic (Van der Wielen 2024), and the concepts of machinic desire, the subject-group, and transversality should be understood precisely as responding to — and indeed motivated by — the need to resist (micro-)fascism.

Deleuze and Guattari affirm that the proto-totalitarian microfascism of the subjected group is very difficult to fight, and that it is more dangerous and pervasive than molar fascism (notably *Ibid.* 215). This kind of fascism is omnipresent in everyday life and our relations to others, as a constant temptation to become our own little policeman: "individuals contain microfascisms just waiting to crystallize" (*Ibid.* 9–10), these "microfascisms have a specificity of their own […] Instead of the great paranoid fear, we are trapped in a thousand little monomanias, self-evident truths, and clarities that gush from every black hole and no longer form a system, but are only rumble and buzz, blinding lights giving any and everybody the mission of self-appointed judge, dispenser of justice, policeman, neighbourhood SS man" (*Ibid.* 228). Deleuze and Guattari's mention of the black hole suggests that microfascism functions like cybernetic modulation, as they criticise the totalising cybernetic logic in terms of the deployment of a white screen or overcoding of reality, to which we can associate the group fantasy, and a computing black hole through which things are selected and interpreted (*Ibid.* 179). In other words, it seems that according to the authors microfascism takes the form of numerous microfascist machines, which function according to a totalising, cybernetic logic, in which the group's imaginary formations play a crucial role.

Apart from explaning how desire can desire its own repression, this mechanism also shows how Deleuze and Guattari can affirm that there is only one kind of desiring production, which is both sexual or psychic and socio-political in nature. This is evident when we look at the political significance that they ascribe to partial objects, that is, the pre-genital and pre-Oedipal drives and investments, which are not integrated into global persons. They write: "Drives and part-objects are neither stages on a genetic axis nor positions in a deep structure; they are political options for problems, they are entryways and exits, impasses the child lives out politically, in other words, with all the force of his or her desire" (*Ibid.* 13). As they note, these partial objects tend to become repressed through social codification, and this has both sexual and political significance. Any psychoanalytic interpretation that reduces these phenomena to stages in the development toward genital sexuality and

the Oedipus complex, or any theory that excludes them from the political sphere, contending that they are of a different nature — as Reich does — disregards their scio-political significance and undermines their revolutionary potential. This can also be considered repressive and microfascist.

But the question arises: how exactly does this concept of microfasm, of desire desiring its own repression, explain molar fascism? Even though we can understand why Deleuze and Guattari affirm that there is a continuity between this kind of microfascism and a full-blown or molar fascism, in the sense that the former can crystalise into latter, which additionnaly seems to imply the former, the two are different in nature and their precise relation remains unclear. At first sight, Bion's fight-fight group, which is united against an enemy, and his dependent group, which needs a leader, or a mixture of both, seem able to explain the main aspects of fascism. These strongly resonate with the aggressivity, the phantasms of war and destruction, and the brotherhood and "us against them" mentality portrayed by Theweleit, as well as with the relation to power and the role of the leader described by Reich. What is more, Theweleit's descriptions are in line with the Bion's idea that, on a basic level, groups respond to paranoid-schizoid fantasies and anxieties, notably the fear of disintegration.

However, despite these similarities and resonances, this does not seem sufficient to explain fascism: the group mechanisms that Bion and Guattari describe are expressed in much more subtle ways than full-blown fascist mouvements, and they mostly do not explicitly or verbally express their microfascist tendencies. Indeed, in both authors, these mechanisms seem to be mostly unconscious, and revealing them results from analytic interpretation. If Guattari associates the subject group with eternity, inertia, repetition and thus a kind of dead drive or eternal return of the same, this is not because there would be an explicit desire for death, but a logic of equivalence and of identity in the way in which the group and its members interpret and appreciate things. In other words, subjected groups do not necessarily imply an overt desire for repression and destruction, or a well-defined enemy at all, just like a sense of belonging and segregative desire does not necessarily go together with feelings of supremacy and hostility.

What is more, as Theweleit's descriptions show, the fascist imaginary indicates a different relation to power than Bion's fight-flight group: the authority of the leader does not derive from the fact that the masses would be helpless or weak, on the contary, together with its hierarchy, organisation and war-waging, the power of the leader allows people to participate in this power and to exercise their compulsion for domination (Theweleit 1996: 368–73, 392, 406). According to Theweleit, this relation to authority does not stem from people's respect for and fear of their authoritarian fathers, but rather from a fear of becoming dependent on their families and on their ridiculous, weak fathers again, after the war, which provided interesting

conditions for many men — notably financially and in terms of their pride and self-esteem.

Becoming-Fascist as a Destructive Runaway Process

As a result, the category of the subjected group and the notion of microfascism seem insufficient to account for the emergence of something so aberrant and extreme as fascism on the molar level. This seems to be related to the problem formulated in the following pasage:

> the question remains: When does the abstract machine of faciality enter into play? When is it triggered? Take some simple examples: [...] the political power operating through the face of the leader (streamers, icons, and photographs), even in mass actions [...] It is not the individuality of the face that counts but *the efficacy of the ciphering [that is, computing] it makes possible* [...] This is an affair not of ideology but of economy and the organization of power *(pouvoir)* (DG 2005: 175; my emphasis).

Deleuze and Guattari add that a face is not necessary for all kinds of molar power formations, but that certain forms of power operate through a face or a leader. Especially interesting to us here is that the authors define the abstract machine of faciality, which explains how power can be structured around a (fascist) leader, as a computing process, which structures the economy and organisation of this power. This means that we can relate this process to cybernetics, just like the desire of the subjected group. Indeed, the authors expressly relate this to what they call the white wall/black hole structure, which is in turn related to the cybernetic structure: "the black hole/white wall system [...] produces faces according to the changeable combinations of its cogwheels" (*Ibid.* 168).

Deleuze and Guattari add that the product of this kind of process — for example what they call "faciality" (*Ibid.* 167–91), which is present in fascist power formations — does not resemble that which produces it. In David Lapoujade's terms (Lapoujade 2017), it constitutes an "aberrant movement" — a deviation that, in cybernetic or computational terms, can be conceptualised as a runaway process. For Deleuze and Guattari, this kind of process is not necessarily negative, on the contrary, because it allows for change. In their own terms, "a line of flight [enables] one to blow apart strata, cut roots, and make new connections" (DG 2005: 15). However, according to them this kind of process nevertheless always risks turning into a destructive line of abolition or of death (notably *Ibid.* 229).[7] In what follows, I will argue that

[7] Given the importance of the theme of the line of flight in Deleuze and Guattari's *A Thousand Plateaus*, this makes fascism still a major strategic enemy in this work, just like it was in *Anti-Oedipus* according to Foucault (see note 4, above).

the relation between microfascism and macrofascism should be understood as such a process, driven by positive feedback stemming notably from the content of propaganda, speeches, popular songs and literature, such as those that Theweleit describes, which amplify certain tendencies or functions that are already present in the existing machinery of the subjected groups. This perspective allows to account for how the abstract machine of power, its line of flight, can evolve into a destructive line of death and how different microfascisms, or a "multitude of black holes" can "become centralized" and come into "resonance" to "form a system" — a "great paranoid fear" (DG 2005: 228) or a full-blown, molar fascism.[8]

Theweleit describes the proto-fascist imaginary of what he calls the "soldier males" (Theweleit, 2003: 23) in the early 1900s, on the basis of diaries and memoirs of members of the *Freikorps* elite (*Ibid.* 3-18) — some of whom later became high-ranking Nazis (*Ibid.* 25) — noting that these writings resist usual interpretations of fascism. On the basis of these writings, Theweleit observes an ambiguous relation to love and to women: usually, there is kind of apathy or uninvolvement regarding the soldier writers' wives — whose names are almost never mentioned — and an internal censoring in relation to everyting sexual and affective (*Ibid.* 3–7). Love is portrayed as an abyss of pain and destruction (*Ibid.* 9–10), and the soldiers seem more afraid of love than of war (*Ibid.* 15). According to Theweleit, "[t]hose passages reveal strangely ambivalent emotions. They vacillate between intense interest and cool indifference, aggressiveness and veneration, hatred, anxiety, alienation, and desire" (*Ibid.* 24). The imagery that is used in relation to women and to sexuality is the same as the one that is used in relation to communism: an indecent, dirty stream — for communism: "the Red Flood" (*Ibid.* 16). In short, women and love appear as dirty and painful, and war seems more important than marriage and women in *Freikorps* literature. According to Theweleit's interpretation, the impossibility of sexual intercourse with women is avenged or compensated through violence and killing (*Ibid.* 34–5).

In light of this aversion to women, Theweleit sets out to look for what these soldier males *do* love, on the basis of their writings:

> —the German people, the fatherland
> —the homeland soil, native village, native city
> —the "greatcoat" (uniform)
> —other men (comrades, superiors, subordinates)

[8] In the same way that they do not accept an explanation of fascism that supposes two different kinds of production — sexual and economic, in Reich — Deleuze and Guattari are not satisfied with an explanation of the desire for death and destruction trough the death drive, like in Freud or Freudianism. Indeed, for them an explanation must depart from one and the same plane of desiring production, without supposing an external, biological reality that would come out of nowhere to produce a desire for destruction (see Theweleit 2003: 221–4 and 1996: 278; DG 2000: 331–3 and 2005: 160, 229). "We are not invoking any kind of death drive. There are no internal drives in desire, only assemblages. Desire is always assembled; it is what the assemblage determines it to be" (DG 2005: 229).

—the troops, the parish, the community-of-blood among fellow countrymen
—weapons, hunting, fighting
—animals (especially horses) (*Ibid.* 61).

All of these elements have a military connotation, so we can see how this content prefigure fascism. As Theweleit notes, for these men, the possibility for love and sexuality is bound up with the faith of the nation, for example with the duty to be away at war or not (*Ibid.* 27–35). What is more, according to him, the male soldiers are characterised by the presence of a rigid anti-female armor (*Ibid.* 300–62): this armor creates a sharp boundery between inside and outside, it censors them and separates them from their affects — from the stream of desiring production —, creating more and more shame and embarrassment regarding these affective elements, as the boundary becomes increasingly more constricted. In the literature, imagery of walls and dams, which become disrupted by streams — notably streams of blood — are frequently associated with women (*Ibid.* 384–5). Theweleit notes that these images bear similarities to those found in later fascist literature (*Ibid.* 360–3; Theweleit mentions *German Workers' Poetry, 1910–1933*). While it is evident how this content prefigures fascism, where it leads to violent desires for the destruction of alien flows, and sheds light on the symbolism and imaginary it employs, this does not fully account for the intense violence and widespread success of this aberrant political movement. Indeed, these prefiguring elements must have been somehow amplified and communicated or shared with the masses.

Theweleit argues that "[t]he real problem is that [the male soldiers'] bodies cramp up when they try to feel pleasure; sweat breaks out where love should; [their] soft, erect members become unsatisfied bones; [their] desire to penetrate another person's body becomes a lethal act; and contact between two sets of skin, two bodies, produces tension, dirt, and death, instead of release, purification, and rebirth" (*Ibid.* 417). The distinction in this culture between male and female, or cleanliness and dirt, and the value or even obsession with the former, resonates with the idea of homogeneity that is implicitly present in the subjected group, reinforcing this affect and the need for a rigid and pure unity. What is more, according to Theweleit, the male soldier "found himself in a process of disintegration, dissolution, molecularization — a process that threatened to completely cancel him out as an entity, to attack the controlled coherence of his sense perceptions and explode it into an infinite number of mutually hostile particles" (*Ibid.* 427). This pre-Oedipal fear of disintegration corresponds to how one feels in a group according to Bion, which means that this would be intensified in groups of soldiers or masses of people, thus reinforcing the need for purity, for rigidity, and for an armor. We can interpret this through the idea of redundancy, where certain tendencies are reinforced or amplified because of a

resonance or positive feedback between them: here, the desire for purity and the fear of disintegration positively reinforce each other, thereby intensifying these affects and potentially producing a more rigid or unified system — unity between the collectivity of male soldiers — which in turn would amplify each male soldier's individual affects.

What is more, Theweleit distinguishes various periods within his materials. Prior to 1933, autobiographical content was more prevalent, whereas afterward, the dominant style shifts to that of the novel, introducing a new central figure: the national-socialist soldier hero (*Ibid.* 23). These narratives suggest that the male soldier had been striving for National Socialism since around 1920. However, Theweleit notes that before this literary development, the protagonists of the autobiogrphical writings were typically soldiers who took pride in their political ignorance, so that this national-socialist soldier was a literary invention. As a result, we can understand this new form of literature and this new hero as a kind of overcoding: the excessive or redundant encoding of information, which adds a layer of meaning, thus distorting the original message. In Deleuze and Guattari's terms, we can say that this makes the different black holes resonate, and in this case also the different subjects of dread and repugnance, in order to form a larger, paranoid fascist machine. Indeed, we have seen how dependent groups and their microfascisms produced "interactions without resonance" (DG 2005: 228). Just like the power that crystallises into a State, we here have "a global (not local) integration, a redundancy of resonance" and "an operation of the stratification of the territory" (*Ibid.* 433).[9] Unlike in other kinds of State, what resonates in producing the fascist national-socialist State are not positive and open territorial elements, like the economies of cities or different cultural variations for example, but the dark, black holes or microfascisms of subjected groups and individuals.

Indeed, we can even say that fascism manages to celebrate repression and make it enjoyable. As Theweleit notes, in its mass rituals or mass art (Theweleit 2003: 429–32), "fascism translates internal states into massive, external monuments or ornaments as a canalization system, which large numbers of people flow into" (*Ibid.* 431). In its red parades, fascism represents and celebrates how the streams or flows of desire have been repressed. Participating in them is thrilling, and means both participating in the expression of desire and in its repression and canalasation into rigid formations. In Theweleit's terms, "the scenario of the parade abolishe[s] the contradiction between the desiring-production of the individual and the demands of social power" and, in this way, "fascism translates internal states into massive, external monuments or ornaments as a canalization system, which large numbers of

[9] Deleuze and Guattari note that this is not a necessity inherent to human collectives, and that Claude Levi-Strauss and Pierre Clastres have shown that so-called primitive societies can ward off both the emergence of a State and of a territory that is stratified into agricultural territories and cities for example (DG 2005: 429–3).

people flow into" (*Ibid.* 431). This type of mass event is incredibly exhilarating and fulfilling, especially for individuals who have been living in isolation, within their body armor, under social constraints, and with a fear of dissolution which inhibits desire, as described above. It induces a trance-like state and a sense of liberation, while following rigid patterns. We could say that such an event enacts the subjected group, while intensifying its uniting and segregative value and sentiments.

In a similar way, Theweleit remarks that Hitler was able to use in his speeches what was present in the psychic and sexual states of men, in order to express "the whole configuration of existence as a 'man among men,' in a form appropriate to his time, namely fascism" (Theweleit 1996: 413). This is also expressed in the short but ubiquitous phrase "*Heil*!": "[t]he word they repeatedly scream at the party congress is 'whole' — heil, heil, heil, heil, heil — and this is precisely what the party makes them. They are no longer broken; and they will remain whole into infinity. Eternal life takes place in the here-and-now... really and truly" (*Ibid.* 412). All individuals, all the *loci* of repression resonate together in these ritualised expressions as well as the rigid power formations of the fascist State, creating a massive fascist war machine: "every fascism is defined by a micro-black hole that stands on its own and communicates with the others, before resonating in a great, generalized central black hole. There is fascism when a war machine is installed in each hole, in every niche" (DG 2005: 214). In other words, positive feedback and resonance amplify existing microfascist elements, to produce a subjected group "to the n^{th} power" (to adopt the formulation of Deleuze, notably DG 2000: 311) — a line of flight. But this is not all, the reinforcement of the homogenising, segregative and repressive aspects of this kind of group also makes this line of flight turn into a true, fascist "line of active destruction or abolition" (DG 2005: 135; see also 230–1, 285, 422–3), "a line of death" (*Ibid.* 229, 285), or an annihilating "great, generalized central black hole" (*Ibid.* 214).

Indeed, the intense and almost sacred expressions of mass rituals emerge as one of the only means of satisfying desire — together with war and destruction. We have seen that the proto-fascist imaginary placed great emphasis on cleanliness and purity in contrast to dirt. This idea became associated both to the individual and the nation, producing different kinds of impurity in the imaginary: sexuality, affectivity, women, the masses, communism, commingling, racial impurity, etc. (Theweleit 2003: 386–429). This aversion becomes a violent repression and desire for destruction, in such a way that "pleasure is taken in violating whatever displays itself as living" (*Ibid.* 422) — both in oneself and in others. This is manifested in the different types of "dirt" that were present in concentration camps, which were so numerous that they incited a project of classification by ex-*Freikorps* Nazist Rudolf Höss (Theweleit 2003: 383–4), as well as in the idea of a State whose role is to fight any kind of impurity that could soil it (*Ibid.* 398).

Theweleit shows how this idea of violent repression on different levels is reinforced through texts, songs and propaganda — notably by Alfred Ernst Rosenberg and Dietrich Eckart — and how it finds expression in different violent acts and representations of them (Theweleit 1996). Suffice it so say that the material that he analyses manifests the "refusal by fascism to relinquish desire", while also showing how desire takes "the form of a demand that 'blood must flow,' desire in its most profound distortion" (*Ibid.* 189, see also 427-8). This is in line with what Deleuze and Guattari affirm regarding Nazi statements, which according to them "always contain the 'stupid and repugnant' cry, *Long live death!*" (DG 2005: 231). War and destruction are the only option left for desire because all its possible ways of satisfaction have been blocked, repressed, prohibited. What is more, the repression that happens on the individual level on its desiring production or partial objects is reinforced by the fascist collectivity or the mass, which also sees violence and repression as its only way of persisting. In Theweleit's terms: "War and war only can set a goal for mass movements on the largest scale while respecting their molar, antirevolutionary character" and "[o]nly war makes it possible to mobilize all human psychic forces while maintaining existing types of human beings" (*Ibid.* 201, see also 411).

This is exactly *the* danger of the line of flight, according to Deleuze and Guattari: "the line of flight crossing the wall, getting out of the black holes, but instead of connecting with other lines and each time augmenting its valence, *turning to destruction, abolition pure and simple, the passion of abolition*" (DG 2005: 229, see also 197, 200, 205–6) or "instead of opening up the deterritorialized assemblage onto something else, it may produce an effect of closure, as if the aggregate had fallen into and continues to spin in a kind of black hole" (*Ibid.* 333–4). When this happens, change or becoming develop into death and destruction or, in Deleuze and Guattari's words, "the war machine has reached the point that it has no other object but war [...] it substitutes destruction for mutation [... and] no longer draws mutant lines of flight, but a pure, cold line of abolition" (*Ibid.* 230). The authors add that this happens when a deterritorialising movement happens too fast or too suddenly, or under precocious conditions and when productive paths are blocked — this is indeed what happened in German fascism, which emerged at a time when the cultural and socio-economic conditions were dire, where the imaginary world of a majority of men fostered repression and violence.

According to Theweleit, however, this kind of phenomenon does not depend only on particular socio-political or historical conditions, on a particular political regime, and even not a specific pole of the political spectrum (Theweleit 1996: 418). For Deleuze and Guattari we should distinguish this from the totalitarian regime, which according to them only arises on the molar macropolitical level, as a State with rigid segmentarity and a particular mode of centralisation and totalisation (DG 2005: 214). In contrast to this, fascism is already present on the molecular level, which a

fascist State can rely on and make resonate in its destructive war machine. We could say the same of fascist leaders as well as movements or other organisations, even when they are not States, which makes fascism especially dangerous and pervasive, because of its supple, molecular nature. Indeed, as Deleuze and Guattari put it, "if Hitler took power, rather then taking over the German State administration, it was because from the beginning he had at his disposal microorganizations giving him 'an unequaled, irreplaceable ability to penetrate every cell of society,' in other words, a molecular and supple segmentarity, flows capable of suffusing every kind of cell" and "[e]ven after the National Socialist State had been established, microfascisms persisted that gave it unequaled ability to act upon the 'masses'" (*Ibid.*).

Deleuze and Guattari compare fascism to a cancerous body: "What makes fascism dangerous is its molecular or micropolitical power, for it is a mass movement: a cancerous body rather than a totalitarian organism" (*Ibid.* 215; for the precise relation between the concept of the cancerous body and the diferent kinds of lines that Deleuze and Guattari elaborate in *A Thousand Plateaus*, see Protevi 2000). The cancerous proliferation of microfascist black holes prepares the way for the destructive line of flight of molar fascism as a mass mouvement and political regime. What is more, given that it constitutes the main danger pertaining to the line of flight, the risk of the emergence of the fascist war machine is always there when there is a (desire for) change or a revolutionary will.[10] But what exactly causes microfascism to escalate into molar fascism, into a line of abolition causing a sudden destratification? I have argued that this progression should be understood in cybernetic terms, as a runaway process driven by redundancies and positive feedback loops that culminate in an aberrant line of abolition and abrupt destratification. The desire of the subjected group — which, like Lacan's desire originates from lack, is related to castration, and functions cybernetically — is amplified and intensified by the perception that society, others, and desire are deficient — lacking order, purity, wholeness — as well as by literature and collective rituals that confirm and intensify this perception and the desire of subjected group — which desires homogeneity and eternity — thus creating a self-reinforcing positive feedback loop and an aberrant, fascist desire for destruction.

Conclusion: Dissipating Phantasms

In this article, I have tried to show how the imagination operates in fascism, through the thought of Deleuze and Guattari and Theweleit. I have first addressed Deleuze and Guattari's critique of Reich, who explains the rise of fascism through the idea of a deception of the masses, and who seems to consider socio-economic and psycho-sexual production as two very different realities. In contrast to this, Deleuze

[10] This idea is already central to Guattari's early work, *Psychoanalysis and Transversality*, where one of the main preoccupations is how emancipatory or liberating movements tend to turn into the opposite of what they aspire to be to become microfascist subjected group (see Laberge 2024).

and Guattari consider these two as belonging to one and the same economy of desiring production, which equally produces economic production relations, power formations, and fantasies (DG 2000: 39). In this way, their thought has the potential to be able to account for the emergence of different forms of fascism immanenlty. Following Theweleit, I have focused on the role of imaginary formations — more precisely of fantasies. Relying on Bion's notion of basic assumption, I have offered a cybernetic interpretation of the functioning of the group fantasy of the microfascist subjected groups, as well as of the relation between microfascim and macrofascism. Motivated by the notions of the line of flight of deterritorialisation, I have interpreted the aberrant development of the microfascist subjected groups into a full-blown, molar fascism as a runaway process, fed notably by elements that speak to the imagination and that amplify certain functions and aspects of the existing subject groups and their group fantasies.

This interpretation again confirms (see notably Protevi 2000: 186–7) the importance that Deleuze and Guattari ascribe to micropolitics, or to the politics of our everyday relations and our relation to ourselves, given that microfascisms constitute the perfect breeding ground for molar fascism as a mass movement. This article also shows the importance of the analytic dimension, because of the role fantasies play, both on the micro- and on the macro level. Indeed, an important aspect of the response to the question, "what can be done to prevent the theme of a race from turning into a racism, a dominant and all-encompassing fascism, or into a sect and a folklore, microfascisms?" (DG 2005: 379), would be that we need to look at the economy of our (group) fantasies. As we have seen, according to Deleuze and Guattari, fantasy is always group fantasy, but these can be considered from two different angles: on the one hand, the relation between a fantasy and the constitution of subjected group or gregagrious masses, on the other hand, their elementary and partial, machinic and transversal aspect, and their possible connections and bifurcations. As Guattari argues, a therapeutic or revolutionary subject-group cannot be "bogged down at the level of the imaginary" or a "prisoner of its own phantasies" (Guattari 2015: 224). In short, resistance against fascism would require that we constantly rearrange our group phantasies, that we dissipate the totalising and repressive ones, in order to foster "the emergence of independent groups capable of controlling their own phantasizing sufficiently to restrict it to transitional phantasies — phantasies whose historical limitation is recognized" (Guattari 2015: 258).

By relating the emergence of molar fascism to a cybernetic runaway process, this perspective highlights certain mechanisms that we can look out for, notably the emergence of redundancies and positive feedback, which can amplify existing tendencies, producing aberrant developments. It also shows the importance of the question whether a process is able to branch out or if it is closing in upon itself, potentially turning into a line of abolition. This seems especially important today because we are constantly fed all kinds of content notably by social media — but

not only — which, moreover, is picked out for us by algorithms, which already tend to exacerbate or amplify individual tendencies. Additionnally, for many people the huge amount of time spent in front of screens limits the possibility of other types of experiences — or influences and even determines them — thus potentially consituting a movement of closure. Here, the questions arise: What is amplified through certain uses of media or mass events? Are there sufficient connections or are all pathways blocked, so that this could turn into line of destruction and death?

I hope this article will contribute to our theoretical analyses of and practices of resistance to fascism today, as both fascism and male fantasies are thriving again, notably in the growing online manosphere (notably Sugiura 2021), which provides a space for the expression and amplification of (misogynist) male imaginaries. As the reader may have noticed, Theweleit's analyses strongly resonate with certain phenomena that we can observe today in the manosphere. Just like in the (proto-) fascist writings that Theweleit analyses, the — very mediatised — contemporary masculine imaginary, which has been linked by researchers to far-right and fascist ideologies, features muscular bodies (see Farrell-Molloy 2022, Lubarda 2024, Tebaldi 2024, Tebaldi and Burnett 2024) — bodies that are ready to fight for the good and the purity of the race and civilization. Just like in the German (proto-)fascist imaginary, this imaginary features a conservative return to nature and tradition, and an ideal of purity (see Wodak 2021, Tebaldi 2023a and 2023b, Tebaldi and Burnett 2024), as well as a Darwinist dimension of biological determinism, for example in the so-called Red Pill community, who believes that men are biologically superior and that if one is going to lead a life of (involuntary) celibacy is determined by looks and genetics (Vallerga and Zurbriggen 2022, Van Valkenburgh 2018). Just like the male fantasies that led to fascism in Germany in the last century, this imaginary, and notably the red pill ideology and the notion of involuntaty celibate (incel), leads to a misogynist attitude, to violence against women, and even in some desperate cases to self-destruction (Kelly, DiBranco and De Cook 2021: 19–20). Finally, male loneliness (notably Botha and Bower 2024, Cox 2021, Reeves 2022), which has been characterised as an epidemic, resonates with Theweleit's desciption of men cutting themselves off from pleasure and desire, associating love with suffering and preferring violence to romantic feelings.

It thus seems that we here have a cancerous body, a multiplicity of microfascist communities and organisations, which form the perfect breeding ground for a molar fascist power formation according to Deleuze and Guattari. Digital technologies and realms like the manosphere further constitute perfect tools to create redundancies, to amplify the elements that are present in subjected communities, and to make these different black holes resonate. All of this shows the urgency of the question how molar fascist formations emerge on the basis of microfascisms, and the importance of experimenting with practices of resistance, in order to forestall the rise of this kind of aberrant movement of sudden, destructive destratification.

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Generation of hypotheses and problematic portions of phenomena

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Abstract
In this paper, we present our inferential and dynamic conception of surrogate reasoning in scientific modeling. To this end, we redefine the notion of hypothesis generation and delve deeper into distinctions that we consider fundamental, such as that of the problematic portion of phenomena. We conclude by pointing to a precedent for our approach in Constructive Type Theory.

Keywords*: hypothesis, models, scientific representation, surrogate reasoning.*

Resumo
O objetivo deste artigo é apresentar a nossa concepção inferencial e dinâmica do raciocínio substituto na modelagem científica. Para isso, redefinimos a noção de geração de hipóteses e aprofundamos distinções que consideramos fundamentais, como a da parte problemática dos fenómenos. Concluímos apontando um precedente para a nossa abordagem na Teoria dos Tipos Construtiva.

Palavras-chave*: hipótese, modelos, representação científica, raciocínio substituto*

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Some preliminary concepts: model, portion of phenomena, objective system.

First of all, some terminological clarifications. We will refer to a model, in a very general sense, as a device (whether constructed or not, concrete or abstract) intended to explain, elucidate, clarify, understand, and/or predict (among other objectives) a phenomenal portion. We do not give details about the nature of models, as we believe that this is not relevant to our objective. However, we do point out, and this is very important, that we will only deal with those that are intended to perform substitute reasoning. In other words, we assume that they exist in the sense indicated above and that, of all their functions or roles in practice, we will focus on the inferential or logical aspect. We leave aside models that are not intended to fulfill this function.[1]

When we refer to the portion of phenomena [PF], we refer to the quantitative or qualitative data[2] that we have collected and from which we develop or choose a model. We understand that the data comes from a phenomenal source that emits it. However, on the one hand, we do not consider it equivalent to the portion of phenomena. The latter is only a cutout of data from the former. On the other hand, when working with data, we are not postulating the existence of the source and, therefore, we separate the modeling process from any ontological assumption regarding it. That is, we model to solve questions related to it, but we do not presuppose its existence nor do we model to prove that it exists. Often, we only have data (and sometimes very little and confusing data), since the phenomenon itself is not accessible. This is the case, for example, with macro or micro portions of the Universe, of which we can usually only collect a few fragmentary data using instruments. We also point out that the modeled 'portion of phenomena' is usually referred to in the general literature on the subject as the 'target system'[3]. However, as we have already argued in Redmond & López-Orellana (2022, 2023a, 2023b), it is important to be able to distinguish between the two, and we have therefore placed special emphasis on keeping them separate in our presentation.

Portion of phenomena and problematic portion of phenomena

Finally, we point out that from the broad spectrum of portions of phenomena that can be considered (including some that do not yet exist, such as those projected by the architect), our research focuses on a group that we classify as problematic

[1] In Redmond & RLO (2024) we give details of cases of models that are not intended for surrogate reasoning. See also in Redmond (2020; 2021a,b; 2022), Redmond & López Orellana 2023b; 2024a,b,c)

[2] This is all that matters, in our view, for consideration in the branch of modeling practice we are analyzing. We do not believe it is necessary to define a realistic, unrealistic, or anti-realistic approach in this matter.

[3] We maintain this designation in our research, although we are not postulating that it consists of or possesses the conformation of any type of system. It would be more appropriate to simply say "objective" of the model, but we do not want to stray too far from the language used by our colleagues in the development of these topics.

[PPF]. Below, we will give certain conditions that a portion of phenomena must meet in order to be a problematic portion of phenomena, but we do not intend to be exhaustive and, therefore, much less to establish a general criterion for defining what a problem is in science. We therefore have that a portion of phenomena is problematic [PPF] when:

i. we know that there is a source of phenomenal data, but we do not really know what it is like.
ii. we do not know whether there is a source of phenomenal data or not.
iii. we know that there was something, but due to the time gap, it is impossible to corroborate it directly.

Why would these portions of phenomena be a problem? In the first case (i), there are two reasons. The first is that we cannot identify the source due to a lack of information about it. This lack of knowledge about its nature (we do not even know approximately what it is) prevents us from directly developing or choosing a basic configuration for our model, greatly complicating the modeling process. And therefore, for the generation of the model (we mean: constructed or chosen), a cognitive process is triggered, closer to invention or artistic production (heuristics). In other words, more than ever, the modeling process must be carried out beyond all ontological constraints. If we wait to know what we have in front of us in order to model it, science would be lost. Normally, this limitation in the data for modeling comes from the macro or micro aspects of the portion of phenomena, or from the observational limitations inherent to human beings. For example, the different models proposed for the minimum portion of phenomena (Dalton, Rutherford, etc.), which contrast with the scale model of a dam that an earthquake researcher makes to evaluate its resistance through simulations. The former corresponds to a free play of the imagination (because it is a PPF), while the latter must conform to the original measurements of the dam and translate them into a scale model.

It should be added that when we say ‘we don’t know what it is’, we are not pointing to ontological questions. However, despite having no ontological commitments, in order to generate a model we need a basic configuration in order to organize the information. This basic configuration for PPFs is certainly provisional in nature. Cases of PPFs would be, for example, the trichronic DNA model (Pauling and Corey, 1953) and the subsequent double helix model by Watson and Crick. The second reason is that it is not necessary, for some reason, to propose complementary data (from a complementary source): the data can be adjusted to the model.

The second case (ii) would refer to those models that postulate complementary data from a complementary source and that it is appropriate to postulate for the resolution of the problem. In other words, the data collected from the source does not include data considered extra for the modeling. The model not only gathers the data available from the source, but also gathers data proposed in a complementary manner

in order to solve the problem. For example, in the case of disturbances in the orbit of a planet (e.g., Mercury), postulating that there is a source of gravitational force (we do not have this data) to explain the disturbance data (data that we do have). This would also be the case with Semmelweiss, who postulated cadaveric matter.

In the last case (iii), these are portions of phenomena that are not affected by the macro or micro but are prehistoric. If we dig up a dinosaur skeleton, it may be easier to model what it looked like when it was alive. But in most cases, only vestiges and traces are available, which can lead to different models. This lack of knowledge is often compensated for by using living beings as models. This is the case of the experimental model Polypterus (a lungfish found in different areas of Africa), which serves to explain the role of environmentally induced developmental plasticity in facilitating the origin of the terrestrial traits that led to the appearance of tetrapods in the Devonian period (Lopez-Orellana & Cortés 2019).

We believe that these cases are the most challenging for scientific and philosophical exploration, and it is the purpose of our work to explain how modeling works in them. We distance ourselves from other perspectives that develop more global approaches in which these PPF cases are anomalous cases that must be adjusted ad hoc for the global approach to remain valid.

Clearly, it is not what makes a PPF 'problematic' that the model must address in PPF. Although we clearly have the illusion that it has been resolved once the model works successfully. For example, we have the illusion that the model is a planetary system because it turns out that this basic configuration (a model inspired by our own solar system, not by direct data from the source) allows for predictions, clarifications, etc., all of which are successful. This basic configuration provided by Rutherford and Bohr was transitory from its very conception (we know this today more than ever). And the reason was—in our view—because they modeled a PPF, such as the so-called "minimum portion of phenomena" or, as some prefer, "of reality." This is otherwise presented as an empty expression, since even physics itself has shown that this last bastion (that of being the minimum portion) has not been reached.

Problematic portion of phenomena and representation

Considering these PPFs as a starting point for understanding the practice of modeling sets the direction for our research. First, it is clear that we are not attempting to develop a general theory of modeling, but only to explain how it works in these cases that we consider extreme, paying particular attention to the inferential processes involved (surrogate reasoning). It remains to be seen how far our proposal can be generalized.

Traditional approaches generally consider these cases of PPF as special cases that would require ad hoc adjustments to be resolved. The closest thing in the classical treatment of what we call PPF, in our view, is the distinction between the observable

and the unobservable. There is a vast literature on this subject, as it has not gone unnoticed by any of the most recognized approaches, such as the *Received View* or the *Model-Theoretical View*. Our conception of what a PPF is quite close to what is commonly understood by non-observable. However, we believe that little or nothing has been said about how scientific practice, which begins with the generation of a model, is carried out when confronted with the non-observable. Except, of course, if we consider cases in which the theory itself consists of a family of models (*Model-Theoretical View*), and these distinctions are already predetermined. The latter is in line with the ideal of reconstruction that inspires some philosophical developments on scientific practice.

One of the most challenging notions in all these processes is, we believe, that of scientific representation. An inspection of the article by Frigg & Nguyen (2017) makes it clear that the item: 'representing the unobservable' does not exist. It even seems absurd to raise such an issue. Some will consider it more appropriate to play with the boundary between the observable and the non-observable until they can accommodate their approaches to representation. The latter is especially true when aided by measuring instruments. However, none of these approaches seem reasonable to us. We are convinced that measuring instruments do not provide concrete data on the basic configuration of an unobservable PF, but rather organize the information we have into certain pre-established configurations. In other words, we believe that no measuring instrument is neutral. All are constructed within the framework of a theory that predetermines what that instrument delivers as data (*theory-ladeness*).

We therefore conclude that, from these traditional perspectives, PPFs would be a non-observable portion of phenomena. We define them as such because data on their configuration is absent or because we are proposing a model for which we have incorporated data on a source that is not only non-observable, but about which we do not even have concrete data. In a way, from our point of view, we are considering that a non-observable PF is one that does not provide information about its basic configuration. That is, according to the available information, it could be one or several, it could be this or that, or worse still, we have no theoretical framework to know what it would be.

All these considerations support our idea that the notion of representation must be questioned here. Even adjusting the distinction between the observable and the non-observable (cf. authors who do so), we can hardly establish a structural or similarity relationship between the model and PPF. Much less can it be the basis for logical processes such as surrogate reasoning. However, our point is that even in the case of a PPF, it can be modeled very successfully. And that success is largely determined by surrogate reasoning. For it is surrogate reasoning that allows us to establish a useful relationship between the model and PPF (anticipating, predicting, explaining), even if the PPF remains as such forever.

Representational versus logical thinking

We basically understand that surrogate reasoning starts in the model. But since the model is a 'model of' a phenomenal portion (these are the cases we are considering in this article), when we reason in the model we are at the same time, in a surrogate way, reasoning in that portion of phenomena. The expression 'at the same time' means that this is our intention as long as we are engaged in a modeling practice. The term 'surrogate' refers to this strange way of reasoning about one thing as if it were another[4]. However, some clarifications are necessary in this regard. That the model is a 'model of something' is understood here as one of the modes of representation, specifically scientific representation. But whatever notion of representation we choose (there is more than one), our point is that surrogate reasoning cannot find its ultimate foundation in it. That is, to claim that the conclusions obtained in M are also conclusions in the portion of phenomena cannot be justified by the fact that M represents PF. Why? Because surrogate reasoning is a mode of reasoning and must find its reasons and bases in logic itself, and the notion of representation is not a logical notion. After all, what is Representational Thinking? The mere formulation seems to indicate that I am entitled to carry conclusions from one side to the other in the name of representation. It may be an idea that finds some support in so-called analogical reasoning for cases such as the architect who models a house or the engineer who models an airplane turbine. And as long as, according to the theory, it is a matter of properties of one that I attribute to the other. But, in our view, this is a difficult idea to sustain, for example, in cases of scientific research where, as we pointed out above, enormously large (astronomy) or enormously small (atomic level) portions of phenomena are modeled. Only Suárez's (2004) proposal seems to assume these limits and proposes a radical version of representation in terms of surrogative reasoning (see Appendix 1). But even so, we believe that it has not managed to separate itself sufficiently from the notion of representation: the idea remains that we go from one side to the other transporting statements. Ultimately, it is not clear from this perspective what surrogate reasoning is, what its definition is, only that we perform them and that they can be successful.

Surrogate reasoning and hypothesis generation

The formula 'surrogate reasoning' was given by Swoyer in his 1991 article (p. 449). There we can read that Swoyer understands it as a type of reasoning based on representation (Structural representation for Swoyer). But it is worth mentioning that he does not mention that it consists of 'generating hypotheses'. In fact, Swoyer reserves 'hypotheses' for another meaning. Indeed, in his article he points out that it is certain hypotheses that make surrogate reasoning possible and not that the latter consists of them:

[4] "An activity as mysterious and unfathomable as soothsaying or divination" (Contessa 2007, 61).

> Modal facts have a structure. For example, if it is a fact that a is necessarily P, then a is actually P, and if a is actually *P*, then *a* is possibly *P*. My **hypothesis** is that possible-worlds semantics - or, more precisely, the Kripke model structures it employs - **provides** a structural representation of such facts, and that this is what **justifies** its use in surrogative reasoning about them. (our emphasis, p. 495)

Here, hypothesis seems to mean the basic assumptions I make (Kripke model structures) that make surrogate reasoning possible.

A few years later, we find the formulation of 'hypothesis generation' in Contessa (2007, 51, emphasis added):

> Consider again the entirely unfaithful model example. At some point we might have believed that some of the inferences from the model were sound, however this does not need to be the case. Sometimes a model of a system can be put forward as purely hypothetical and conjectural, without anyone believing that any of the conclusions about the system drawn from the model are going to turn out to be true. The model can be used as a **generator of hypotheses about the system**, hypotheses whose truth or falsity needs to be empirically investigated.

Here Contessa seems to mean that the inferences obtained in the model (or its conclusions) are hypothetical in nature in the target. And in this sense we find it summarized in Frigg (SPE, emphasis added):

> A first important condition of adequacy on any reply to this problem is that scientific representations allow us to form hypotheses about their target systems. An X-ray picture provides information about the bones of the patient, and models allow investigators to discover features of the things models stands for. Every acceptable theory of scientific representation has to account for how reasoning conducted on representations can yield claims about their target systems. Swoyer (1991: 449) refers to this kind of representation-based thinking as "surrogative reasoning" and so we call this the Surrogative Reasoning Condition.[2] This condition distinguishes models from lexicographical and indexical representations, which do not allow for surrogative reasoning.

These 'claims' (as Frigg puts it) are not the same as those pointed out by Swoyer, but they seem to match the meaning intended by Contessa and summarized very well by Lalande (1997, 429): ("C. a doubtful but plausible conjecture, whereby the imagination anticipates knowledge, and which is destined to be verified at a later date

[...]"[5]). However, we believe that there is a careless use of the notion of hypothesis here. Clearly, not all hypothesis generation, in the sense of 'claims' indicated above, corresponds to an inferential process. In other words, to paraphrase Contessa, if "scientific representations allow us to form hypotheses about their target systems," not all of these hypotheses come from "how reasoning conducted on representations can yield claims about their target systems." A detailed study of the ways in which we can produce hypotheses from a model does not exist today, but it would be difficult to argue that, in the sense c indicated above, their only source is reasoning. Perhaps this careless use of hypotheses is due to the difficulty of determining or reconstructing these creative processes of generating new ideas such as hypotheses.

We retain for our work, then, that these hypotheses—as these authors think of them—initially conform to 'meaning c', but enriched with the following: they are the consequence or result of an inferential process that takes place in the model, and are then carried (Swoyer speaks of them making a journey [1991, 452, 474, 487]) to the target system. And that the path along which this journey travels is the path of representation. We will call the latter the static approach to inferential hypothesis generation in the model. And how would these hypotheses be generated inferentially in the model? Well, there does not seem to be any restriction. Based on the data in the model, one could proceed by deduction, induction, or even abduction. But these are always performed in the model.

Dynamic approach to inferential hypothesis generation in the model

Our approach distances itself from the static perspective, but we maintain the idea that surrogate reasoning is generating a hypothesis from the model and about the portion of phenomena modeled.[6] In this sense, we maintain that instead of saying that the conclusions in the model make a journey to PPF, we say that the proofs performed in the model are at the same time (in a surrogate manner and by agreement) proofs performed in PPF.[7] We will call this the dynamic approach to inferential hypothesis generation in the model. Let's look at this in detail.

Our starting point is the re-signification or reformulation of the notion of 'hypothesis generation'. In our perspective, 'generating a hypothesis' is generating a logical interaction between two pieces of evidence. In this sense, according to our point of view, our approach involves a pragmatic shift in the understanding of surrogate reasoning (see below). Indeed, the notion of use and epistemic agents with their purposes aligns with our proposal and can be summarized as follows:

[5] "C. Conjecteure douteuse, mais vraisemblable, par laquelle l'imagination anticipe sur la connaissance, et qui est destinée à **être** ultérieurement verifiée […]"

[6] This idea was inspired by the This idea was inspired by the hypothetical demonstrations used by ancient geometers and mentioned by Plato in Meno 86e and Aristotle in Prior Analytics 50a.

[7] In the general literature, the modeled portion of the phenomenon is called the target system. However, we distinguish between the two according to our redefinition of the objective system in order to offer a possible solution to the Targetless problem (Cf. Lopez & Redmond 2024).

> There is an agent *A* who uses the model to generate a hypothesis by proposing an interaction between the evidence for a proposition *p* in *M* and the evidence for the same *p* in PPF for the purpose *P*.

As we pointed out above, in such an interaction, one proof substitutes for the other on the basis of an agreement, which we schematize as $A \rightarrow_{[Hip]} B$ which reads: the proof of *A* is also, by substitution, the proof of *B*.

The latter is the hypothesis generated on the basis of an agreement between interlocutors who, aligned with their purposes, established that logical relationship between M and PPF. The constructed interaction establishes that what is proven in M remains proven in PPF in the sense that the justification for maintaining it in PPF is that it was proven in M. In this sense, we argued that the dialogical pragmatism approach is an ideal framework for formalizing this process (see articles).

To give an example, just as Gentzen considered that the relationship between $p \wedge q$ and *p* is a logical relationship (in fact, it is a rule) which he called conjunction elimination (simplification), the relationship between what is proven in *M* and what I consider proven (with sustainability) in PPF is a logical relationship (because the relationships between proofs, we argue, are a matter of logic). And that is why we believe it is so inappropriate to argue that the notion of representation justifies the latter, just as it is inappropriate to argue that the passage from $p \wedge q$ to *p* is justified by some kind of structural correspondence or similarity or that, since it is logically successful to pass from $p \wedge q$ to *p*, then $p \wedge q$ *represents p*.

In the static approach, what is normally said is that what is proven in M is hypothetical in PPF. Of all the statements that could be carried from M to PPF, and which are all hypothetical until proven (Lalande's sense c), those that were inferred in M correspond to the process called surrogate reasoning.

For our dynamic approach, then, surrogate reasoning is generated dynamically from the agreement between epistemic agents who construct an interaction between proofs. This logical interaction can be schematized as follows:

$$\Vdash_M C_i \rightarrow_{[Hip]} [\Vdash_M C_i]_{PPF} \quad (1)$$

If I proof C_i in M, then C_i will have sustainability in PPF

In this diagram, the expression $\Vdash M\ C_i$ means the set of conclusions $\{C_1, C_2, \ldots C_n\}$ obtained in the model. Meanwhile, the expression $[\Vdash M\ C_i]_{PPF}$ means that those conclusions obtained in M have sustainability in PPF. The latter is indicated by the expression "$\rightarrow_{[Hip]}$" which conveys our idea that a hypothesis has been generated.

In our perspective, there is a pragmatic shift in the understanding of surrogate reasoning. Indeed, the notion of use and epistemic agents with their purposes aligns with our proposal and can be summarized as follows:

> There is an agent A who uses the model to generate a Hypothesis proposing an interaction between the proof of a proposition p in M and the proof of the same p in PPF for purpose P.

As we pointed out above, this pragmatic turn in the understanding of surrogate reasoning was captured in our previous articles from the perspective of dialogic logic (Redmond & Lopez-Orellana 2023b, 2024b, 2024c). Indeed, dialogic logic is a pragmatic perspective on logic that provides us with the necessary elements to represent the logical interactions that, from our point of view, are at stake in the modeling process.

This way of understanding hypothesis generation, we believe, is closer to the treatment of dynamic systems. Indeed, in the static perspective, it is not taken into account that, when generating a hypothesis, PPF could have changed, for example, if one thinks of dynamic systems such as living beings. That is why we believe that, if hypothesis generation is thought of as an interactive construction, it can be more aligned with the mutations (regular or otherwise) that would affect PPF.

In this sense, we have already argued elsewhere that surrogate reasoning has characteristics in common with defeasible reasoning:

> Reasoning is defeasible when the corresponding argument is rationally compelling but not deductively valid. The truth of the premises of a good defeasible argument provides support for the conclusion, even though it is possible for the premises to be true and the conclusion false. In other words, the relationship of support between premises and conclusion is a tentative one, potentially defeated by additional information. (Koon 2021)

Surrogate reasoning is defeasible, according to Koon, because the proof of p in M does not guarantee that the evaluation of p in PPF will be positive, either because the generated hypothesis is incorrect or because the current state of the modeled dynamic system could not be correctly predicted with the hypothesis. Aristotle was already aware of this and therefore classified this type of reasoning as dialectical rather than ostensible or scientific (according to Aristotle's understanding of science). According to the latter, it would be possible to consider the practice of modeling, from an inferential point of view, within the framework of Belief Revision (Redmond 2020).

We summarize as follows: Why is SuR a kind of logical thinking? Because it is an interactive relationship between two logical proofs, where one replaces the other by agreement.

In conclusion: Dynamic substitution and dependence between proofs

Our point, then, is that we must understand the notion of substitution from an inferential and dynamic point of view. To put it bluntly: there is no substitute other than the action of substituting, understood as the action of establishing a logical relationship: that what is concluded in M is sustainable in PPF. To reason surrogate is therefore to establish this logical correspondence between M and PPF.

A logical correspondence that can also be read, from our point of view, as a relationship of dependence. Substituting is, then, establishing a dependence between proofs: the proof of p in M becomes the proof of the sustainability of p in PPF.

A very important antecedent that would help consolidate a logical justification of surrogate reasoning can be found in the work of Per Martin-Löf (1984). Indeed, in the Constructive Type Theory (CTT) approach created by Martin-Löf, the explanation of the meaning of the conditional A → B (Martin-Löf, 1984, p. 7) consists of a method that leads any proof of A to a proof of B. Thus, for Martin-Löf, hypothetical judgments are "judgments made under assumptions" (p. 9). If we assume that A and B are propositions (they could be sets in Martin-Löf's perspective), the generalized form of these judgments is

b(x):A(x) (x:B)

which is interpreted as follows: b(x) is a proof object (dependent) of A(x), provided that x is a proof object of proposition B. From our perspective, we would say that A substitutes B whenever there is a proof object b(x) of A, provided that x is a proof object of B.

In relation to Martin-Löf's work, Goran Sundholm interprets the conditional [(2) if A is true, then B is true] as follows:

> The conditional (2) is a hypothetical judgment in which hypothetical truth is ascribed to the proposition B. Its verification-object is a dependent proof object B:proof (B) [X:proof (A)], that is, b is a proof of B under the assumption (hypothesis, supposition) that x is a proof of A. (Sundholm, 2019, p. 555)

From our perspective, this dependency corresponds to the substitutive nature of the reasoning established between M and PPF.

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Appendix 1

Suárez's strategy is therefore to review what these general conditions might be. He believes that the best way to define the scientific concept of representation is through two necessary conditions: its essential directionality (or representational force of its source) and its capacity to allow surrogate reasoning and inferences. Based on this, the notion of representation involved in the scientific activity of modeling should be considered minimalist and deflationary, analogous to minimalist and deflationary definitions of truth. For Suárez (2004, pp. 770-771), this means 1) abandoning the search for universal necessary and sufficient conditions that are met in each and every concrete instance of scientific representation. Representation is not the kind of notion that requires or admits such conditions. At best, we can only attempt to describe its most general characteristics. Furthermore, 2) it means ceasing to identify and associate characteristics with representation that are deeper than those already found on the surface of the practice itself. Representation then has only the following irreducible features:

> i. the representational force of its source (or model), which is expressed in the following scheme: 'A represents B only if the representational force of A points to B; and
> ii. the inferential capacity, which allows for surrogate reasoning.

The item i. simply points out that a model M is used by an agent A (the scientist) in their practice of scientifically representing a phenomenon f. In this way, it is sufficient to analyze the use of M to understand its function and scope. It reduces representation to the use of M and the 'directionality' of M towards f. Now, ii. simply indicates that M allows A to extract specific hypotheses about f. These hypotheses do not have to be considered 'true', since models only provide us with an approximation of f. The inferences we make about f are plausible; there is no reason to claim that they are true.

Suárez warns that i. does not imply only a basic or ordinary form of representation, which is usually identified as denotation, but that—as *scientific representation*—it adds a characteristic form of *objectivity* to the phenomenological features of ordinary representation, which simply translates into its cognitive value. This is very important for cognition with models, and it is only in this sense that we speak of 'objectivity'.

> Scientific representations have cognitive value because they aim to provide us with specific information about their objectives. The information they provide is specific in the sense that it could not be equally conveyed by any other arbitrarily chosen sign [a model, or any other tool of representation]. (Suárez, 2004, p. 772)

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Imagining the Future of Death

Sarah Carvallo

Abstract

Death is a core aspect of the sustainability of our societies. With our ageing populations and increasingly chronic pathologies, end-of-life is a major issue for contemporary and future societies, in terms of care, medical and economic costs and meaning. Public policy and healthcare systems have yet to succeed in restoring value and meaning to death and end-of-life, which are seen as failures or obstacles dealt with reluctantly. Faced with the powerlessness of scenarios based on the cost/benefit balance, imagination offers an alternative method for, on the one hand, envisaging the evolution of contemporary death systems if nothing changes, and, on the other, considering possible alternatives that could restore meaning and value to death and end-of-life by transforming systems from within. Three applications of an imagination heuristic are developed herein: the first uses the scenario model, no longer to estimate costs and benefits, but rather to project extrapolations that provide a better understanding of current issues; the second analyses the art of conversation as an imaginary exploration of suffering and its ability to restore meaning to the final period of life; the third studies non-medicinal interventions in art as a concrete form of imagination. These three experiments with imagination identify ways in which subjectivities and organisations can be transformed to establish a caring culture as opposed to a culture of risk.

Keywords*: Death, Ageing populations, end-of-life meaning, healthcare systems, imagination experiments, art, caring culture*

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Résumé
La mort constitue la condition de soutenabilité de nos sociétés. Dans un contexte de vieillissement des populations et de chronicisation des pathologies, la fin de vie détermine un enjeu majeur des sociétés contemporaines et futures, à la fois en termes de prise en charge, de coûts médico-économiques et de sens. Or ni les politiques publiques ni les systèmes de soins ne parviennent à redonner leur valeur et leur sens à la mort et à la fin de vie, qui apparaissent comme des échecs ou des obstacles à repousser. Face à l'impuissance des scénarios fondés sur la balance coût/bénéfices, l'imagination offre une méthode alternative pour, d'une part, envisager l'évolution des systèmes de mort contemporains si rien ne change, et, d'autre part, envisager des alternatives possibles susceptibles de redonner sens et valeur à la mort et à la fin de vie en transformant les systèmes de l'intérieur. Trois applications d'une heuristique par l'imaginaire sont ici développées : la première reprend le modèle des scénarios non plus pour estimer des coûts et bénéfices, mais pour projeter des extrapolations qui permettent de mieux comprendre les enjeux actuels ; la seconde analyse l'art de la conversation comme exploration imaginaire de la souffrance et capacité à redonner du sens à l'ultime période de l'existence ; la troisième étudie des interventions non médicamenteuses en art comme forme de l'imaginaire. Ces trois expérimentations de l'imagination identifient des lignes de transformations des subjectivités et des organisations pour établir une culture du soin à la place de la culture du risque.

Mots clés *: Mort, vieillissement de la population, sens de la fin de vie, systèmes de santé, expériences imaginaires, art, culture du soin*

When considering the major challenges societies will face in tomorrow's world, international, European and French organisations all identify the end-of-life issue as an essential element, highlighting our ageing populations, the shortage of palliative care facilities, the anthropological importance of this moment in life, and the suffering that can sometimes be unbearable and overwhelm the person concerned[1]. All reports also point to major inequalities in access to palliative care: in some countries,

[1] "Strengthening palliative care as a component of comprehensive care throughout the life course". WHO 67.19. 24th May 2014. Sharkey L, Loring B, Cowan M, et al., "National palliative care capacities around the world: Results from the World Health Organization Noncommunicable Disease Country Capacity Survey." *Palliat Med* 2018;32:106-113. 10. Halpern SD. "Toward Evidence-Based End-of-Life Care." *N Engl J Med* 2015;373:2001-3. https://doi.org/10.1056/NEJMp1509664. Pennec S, Lépori M, Pontone S, Guion V, Evin A. "End-of-life medical decisions in French overseas departments: results of a retrospective survey." *BMC Palliat Care* 2024;23:224. https://doi.org/10.1186/s12904-024-01552-x.

this concerns access to morphine and opioids; in developed societies, the over-treatment of pathologies can paradoxically contribute to increasing suffering at the end of a person's life. To respond to this challenge, the two standard proposals made today draw on epidemiological and public health arguments to justify increasing the supply of palliative care and, in a growing number of countries, offering medical assistance in dying (MAID), in the form of assisted suicide or euthanasia.

Based on the same observation, this paper proposes an alternative methodology for apprehending the future of death using imagination and, in particular, aesthetic resources as an imagination laboratory. This research aims to show that the future of end-of-life considerations cannot be reduced to either a matter of resources concerning the number of palliative care units or mobile teams, nor to the decriminalisation of medical aid in dying, but instead requires a systemic transformation rooted in our relationship with nature and life[2]. In 2019-2021, the planetary experience of the Covid-19 pandemic shed light on the tragic end-of-life experiences of so many people deprived of support, and their loved ones deprived of mourning during that period. This health crisis gave rise to a collective awareness of the situations faced by people at the end of their lives more generally, and the decriminalisation of medical assistance in dying was accelerated around the world. In 2022, the Lancet Commission on the Value of Death drew a direct link between the ecological crisis and the end-of-life crisis: in both cases, we seek to master nature and life, refusing to recognise ourselves as an integral part of nature and life. The end-of-life crisis we are currently experiencing is part of a system: Kastenbaum identifies "the societal system of death" as the set of parameters which determines both the practical conditions (actors, institutions, places, moments, objects) and the embedded representations that today structure end-of-life support (symbols, images, texts, words, imagination)[3]. Yet the main aim of the system is to eradicate death: the entire healthcare system is today defined as a fight against death and ageing; education and the economy focus on performance and autonomy; insurance companies present death as a risk; the organisation of the stages of life and the institutionalised nature of end-of-life care conceal the importance and meaning of this final period of existence.

To address this systemic problem, "medical solutions" are not sufficient. A purely rational analysis in terms of risks, costs and benefits cannot address the radicality of our scepticism about the meaning of death and end-of-life. We need to re-imagine end-of-life and death by going back to the root of our distress, which is a crisis of meaning[4]. Imagination offers a method not only for understanding, but also as a source of creation[5] for inspiring change, both collectively and on an individual level.

[2] White, L., "The historical roots of our ecologic crisis", *Science*, 1967, 15, 3767.

[3] Kastenbaum R., *Death, society, and human experience*. St Louis, MO: CV Mosby, 1977.

[4] Abel, J. Kellehear, A., "Dying and death reimagined," *Palliative Care & Social Practice*, 2022, Vol. 16: 1-14. G. Steiner, *Le Sens du sens*. Paris, Vrin, 1988, p. 53.

[5] Hocini, F. Dallaporta, B., "L'imagination aux sources de la création, dans le soin comme ailleurs". *Soins*, 886, 2024, p. 60-63.

Since the works of Wittgenstein, Ricoeur and Cavell, philosophy and social sciences have emphasised the importance of imagination in identifying contemporary and future issues, but also in providing realistic avenues for initiating change. There are three levels on which to implement this method of imagination.

Firstly, the imagination allows us to construct a realistic utopia based on trends in the contemporary system of death. Like fiction - science fiction, for example - it identifies probable developments based on our present situation: this makes it possible to become aware of the tragedy of our contemporary rationales, as we are incapable of grasping the major problems generated by our scientific and technological systems, such as the ecological or end-of-life crises[6]. This level enables us to focus on systemic issues. A second level captures the forms of (end of) life experienced by individuals today, confronting them with imaginary forms of (end of) life that may justify the desire to change: as such, it contributes to a self-education that enables us to initiate personal and social transformation. The third level focuses on art as "imagination at work", through masterpieces, performances and experiences that combine both personal subjectivity and collective resonance. Rather than seeking evidence, arguments or facts, art explores possible avenues and proposes subjective experiences that mobilise emotions and elicit collective responsiveness in the sense of a sociology of relations[7]: more precisely, it constitutes a sphere of responsiveness. In these three levels, or dimensions, philosophy not only provides a different way of accessing knowledge, but above all enables us to *recognise* the importance of what is at stake, to become aware of our collective responsibility and to make us want to change. In this way, it deploys an imagination laboratory and a sphere of resonance to help invent the future system of death.

1. Imagining end-of-life in the future: a realistic utopia to transform a complex system

Over the course of the twentieth century, death was transformed into a risk integrated into an epidemiological paradigm[8]. After the Second World War, risk analysis became a decision-making tool based on scientific expertise, and, according to Ulrich Beck, the vector of a reflexive modernity capable of internalising an assessment of the risks arising from our sciences and technologies[9]. At the same time, North American bioethics adopted the risk paradigm to establish the principles of decision-making in medicine, abandoning the idea of establishing a framework of shared values

[6] Sallnow L. et al., Report of the Lancet Commission on the Value of Death. *"Bringing death back into life", Lancet 2022; 399: 837-84, p.* 838.

[7] Rosa, H. *Résonance: une sociologie de la relation au monde*, Paris, La découverte, 2018.

[8] Gaudillière, J.P., "Statisticiens et santé publique: l'invention des facteurs de risques", in *Inventer la Biomédecine*, Paris, La découverte, 2002, p. 218-245.

[9] Beck, U., *Risikogesellschaft: Auf dem Weg in eine andere Moderne*, Frankfurt: Surhkamp, 1986, translated: Risk society.

concerning fundamental human issues: in the context of pluralist democracies, the only potential consensus is aimed at minimising risks[10]. This new conceptualisation of ethics relegates substantial values to the private sphere. So, through epidemiology, biomedical research and bioethics, medicine integrates the risk paradigm into a logic of rational analysis of the cost/benefit balance[11]. This general framework has led to the promotion of a healthcare system that aims first and foremost to preserve life, slow down ageing (anti-ageing) and eradicate death. Today, through its success, this system generates also long and complex end-of-life situations, where patients - and sometimes caregivers - experience the approach of death as a failure, or even as abandonment.

Yet we must recognise that, biologically speaking, death is part of a physiological process and is not pathological. We must also recognise that human - and perhaps animal[12] - death cannot be reduced to a biological or medical matter, but calls each of us, individually and collectively, to question the meaning of existence including death. In this more global perspective, the end of our life is not a risk to be eliminated or avoided, but an experience to be given new meaning and importance. Indeed, the risk paradigm does not answer the question of meaning.

The Lancet report entitled "Bringing dying home" (2022) seeks to address, on the one hand, people's wish to die at home, when the vast majority die in institutions, and on the other, the fact that death no longer has a 'home', because it seems to constitute a scandal or an anomaly that contravenes the logic of autonomy and mastery. How can we transform society so that it recognises the importance and meaning of death[13]? How can we move away from reducing death to a medical problem and restore its full anthropological, social and existential value? Through panel discussions and literature review, the Lancet commission first describes the international contemporary conditions of dying, and then constructs a realistic utopia, drawing on Rawls' method[14] in the end-of-life field, to propose an imagination experience through five forms of life which each condition a distinct value of death. This projection of imagination promotes a holistic approach to the end-of-life issue which, within the parameters of reflection, internalises the relationships, the representations and the uncertain, ambiguous and paradoxical emotions we may experience at the end of our lives. Therefore, it integrates the social determinants of death, dying and bereavement and conceives of death primarily as a relational and spiritual process,

[10] ". . . attempts to bring the common morality into greater coherence through specification risk decreasing rather than increasing moral agreement in society" Beauchamp T., Childress J., *Principles of biomedical ethics* 1979, 2001, p. 407.

[11] Carvallo, S., "Le tournant postgénomique: du risque à la vulnérabilité.", in: *Les vulnérabilités liées à la génomique*, Carvallo, Faivre, L., Paris, Erès, 2025, p. 17-53.

[12] Monso, S., *Playing Possum: How animals understand death*, Princeton University Press, 2024.

[13] Kellehear, A., The social nature of dying and the social model of health. In: *Oxford Textbook of Public Health Palliative Care*. Kellehear, A., Oxford: Oxford University Press, 2022, p. 22-29.

[14] Rawls J., *Law of the peoples.* Cambridge: Harvard University Press, 1993.

rather than as a physiological event[15]. It thus produces five extrapolations from the present situation.

The first scenario ("death overwhelms health systems") imagines a spike in deaths, following a pandemic, a climate event or a nuclear war, for example. We now know that these phenomena can happen, and that our health systems cannot meet the global demands resulting from catastrophes of this scale. The second scenario ("immortality and inequality") continues the current trend towards two-tier medicine, which not only develops cutting-edge methods to improve treatment and extend life expectancy, but also allows private companies to flourish, promising immortality or sophisticated treatments reserved for a select few, thereby reinforcing health inequalities. We also know that care at the end of life is one of the areas of healthcare where inequalities are greatest. The third scenario ("climate response-greater equality") radically transforms our healthcare systems, internalising climate change and aiming first and foremost to attain health equality. In this scenario, death appears as a condition for the sustainability of civilisation: everyone sees it as a moment in the life cycle. The fourth scenario is a rebalancing-focus on health-care system reform and the goals of medicine: priority is not given to scientific and technical successes, but rather to assisting and accompanying suffering throughout the lifecycle. The aim is no longer to prolong life or delay ageing, but to give meaning to life right up to death. Support is not just the responsibility of care professionals, but also of volunteers and, more broadly, of citizens and small local communities. The fifth scenario ("assisted dying spreads") generalises assisted dying not only for people with a life-threatening prognosis, but more broadly for people expressing unbearable suffering or a psychiatric condition, people with dementia or those who are tired of life[16]. It corresponds to the current situation in Belgium, the Netherlands and Canada, where the criterion of a life-threatening prognosis is no longer required to benefit from medical aid in dying[17].

[15] "Radically reimagining a better system for death and dying, the Lancet Commission on the Value of Death has set out the five principles of a realistic utopia: a new vision of how death and dying could be. The five principles are: the social determinants of death, dying, and grieving are tackled; dying is understood to be a relational and spiritual process rather than simply a physiological event; networks of care lead support for people dying, caring, and grieving; conversations and stories about everyday death, dying, and grief become common; and death is recognised as having value." Sallnow, "Report of the Lancet Commission on the Value of Death: bringing death back into life", *Lancet*, Vol 399 February 26, 2022, p. 837.

[16] Sallnow, "Report of the Lancet Commission on the Value of Death: bringing death back into life", *Lancet* Vol 399 February 26, 2022, p. 869.

[17] Boer, T. A., "Dialectics of lead: fifty years of Dutch euthanasia and its lessons", *International Journal of Environmental Studies*, 2018, 75:2, 239-250, DOI: 10.1080/00207233.2017.1415834; Theo Boer, Dutch Professor of Medical Ethics: "I believed that a rigorous framework could prevent the derives of euthanasia: I'm not so sure anymore". Le Monde April 7, 2025. Government of Quebec, Commission on End-of-Life Care. "Rapport sur la situation des soins de fin de vie au Québec du 1er avril au 31 mars 2023", Bibliothèque et Archives Nationales du Québec, 2025 https://organesdeconcertation.sante.belgique.be/fr/documents/euthanasie-publication-des-chiffres-pour-2024-de-leuthanasie-en-belgique. Dierickx et al. "Euthanasia for people with psychiatric disorders or dementia in Belgium: analysis of officially reported

This heuristic methodology follows the format of the scenarios used by the International Panel of Climate Experts but does not aim to assess risks. It considers the life forms and death values within each system. It takes into consideration the emotions, relationships and interpretations that individuals and communities attribute to death. Indeed, the question of meaning is not a purely analytical or logical one; it is not reduced to knowledge and evidence; it also embraces the emotions and relationships that contribute to recognising what does and does not matter, and resonates with the whirlwind of life that envelops us. It invites us to anticipate the interrelated tendencies which structure the contemporary system of death, and to shape the future according to our priorities.

2. Imagination, meaning and conversation

Today, in resonance with the ecological crisis, there is a social quest to invent new forms of life involving transformations in the organisation of work, housing, food, transport, leisure… and also the end of life. Numerous post-Covid studies show, for example, how people today are staging new "greener" representations and practices of mourning[18], or how people are designing end-of-life trajectories in original ways[19]; cemeteries are becoming gardens in which ecosystem services are assessed and the carbon footprint of different funeral rites are compared[20]. These developments are not primarily based on scientific knowledge and evidence but express a quest for meaning that no longer finds an obvious answer in traditional forms. Rather, they reflect the importance of responding to the scepticism that threatens our standard social behaviour with absurdity, and the desire to become better[21], particularly by taking environmental impacts into account and producing a new aesthetic

cases", BMC Psychiatry 2017, 17:203.

[18] Cherblanc, J., Zech, E., Gauthier, G., Verdon, C., Simard, C., Bergeron-Leclerc, C., Grenier, J., Maltais, D., Cadell, S., Sani, L., Bacqué, M.-F. "Sociography of funeral rituals in times of pandemic: from prevented rites to appropriate rites." *Canadian Review of Sociology/Revue canadienne de sociologie*, 2022, 59:348-368. Wang, S.S.Y., Teo, W.Z.Y., Yee, C.W. & Chai, Y.W., "Pursuing a good death in the time of COVID-19", *Journal of Palliative Medicine*, 2020, 23(6), 754-755. Pearce, C., Honey, J.R., Lovick, R., Creamer, N.Z., Henry, C., Langford, A., Stobert, M. & Barclay, S., "'A silent epidemic of grief': a survey of bereavement care provision in the UK and Ireland during the COVID-19 pandemic". *BMJ Open*, 2021, 11(3), E046872.

[19] Mondal, A. P., Bhowmik, P., "Physician Assisted Suicide Tourism - A Future Global Business Phenomenon", *The Business and Management Review*, Volume 10, Number 1, 2018, pp. 35-43.

[20] Quinton, J. M. et al., "Beyond burial: researching and managing cemeteries as urban green spaces, with examples from Canada, *Environmental Reviews*, Vol. 27, No. 2 (2019), pp. 252-262. Decker Jr., C., Muniz, E., and Cruz, N.-J., "Environment systems: a new concept on cremation", *Journal of Sustainable Development of Energy Water & Environment Systems*, 2018, Vol. 6, No. 2, pp. 363-380. Keijzer, E. The environmental impact of activities after life: life cycle assessment of funerals, *International Journal of Life Cycle Assessment*, 2017, Vol. 22, No. 5, pp. 715-730. Lee, K.-H., Huang, C.-C., Chaung, S., Huang, C.-T., Tsai, W.-H., and Hsieh, C.-L. "Energy saving and carbon neutrality in the funeral industry", *Energies*, Vol. 15, No. 4, 2022, Article 1457,

[21] Cavell, S., *Cities of Words: Pedagogical letters on a register of the moral life,* Harvard University Press, 2004.

able to restore meaning: individuals choreograph trajectories towards death through journeys, rites and ceremonies, a whole aesthetic that gives direction and meaning to this final period[22].

While the individuals experience the search for a new form of end-of-life, death and mourning on their own singular scale, this quest also takes on a social and international dimension. It furthermore involves care professionals, funeral directors, urban planners, political decision-makers and associations. This interweaving of scales underlines the fact that individuals alone cannot decide on meaning, which is never reduced to a private affair, but depend on social structures and resonate with social valence[23]. By confronting the criteria of my culture "with my words and my life as I pursue them and as I may imagine them, and at the same time confronting my words and life as I pursue them with the life my culture's words imagine for me[24]", I try to recognise the meaning of what I do and want to say. I recognise that what I express about myself - about my suffering, for example - is rooted in a time, a culture, a community, a language and institutions, which give it the value of a punishment, a redemption, a pathology, a symptom, a failure, a passage, a celebration, etc. Because I am never alone in choosing what to say. I am never alone in choosing the meaning of my death, which aggregates the words and values of the tribe according to their responsiveness[25].

Distinct from pain, suffering lies precisely at the heart of an interpretation, in that it often indicates the impossibility of giving a shared meaning to those moments marked by the end of life, which seem to constitute nothing more than a long wait for a countdown. On the brink of death, the lived experience loses its obvious meaning and may even appear as nonsense. In France, the Comité Consultatif National d'Éthique (CCNE) notes that "the end of life is no longer perceived as an essential time in the human experience[26]." In the 1960s, Cicely Saunders, a pioneer of palliative care in London, emphasised the particularity of this existential moment: suffering can give rise to a desire to get rid of life in order to escape this ordeal. "Such pain is a situation rather than an event and the hardest aspect of this situation for the patient is that it seems to be meaningless as well as endless[27]."

[22] Buchbinder, M., "Choreographing death: A social phenomenology of medical aid-in-dying in the United States". *Medical Anthropology Quarterly*, 32(4), 2018, 481-497. Stavrianakis, A., "Thinking the Obvious. Determination and Indetermination in a Voluntary Death." *Terrains* 2018. https://doi.org/10.4000/terrain.1610

[23] Rosa, H., Resonance. A sociology of our relationship to the world. London, Polity Press, 2019.

[24] Cavell, S., *The claim of reason, Wittgenstein, Skepticism, Morality and Tragedy,* New York, Oxford University Press, 1979, p. 125.

[25] Erard, M., "Concevoir une linguistique de la mort". *Anthropologie et Sociétés,* 45, 1-2, 2021, p. 95-108.

[26] Avis 139 - CCNE. "Ethical issues relating to end-of-life situations: autonomy and solidarity" 2023. Ccne-ethique.fr, p. 9.

[27] Saunders, C., *The Management of Terminal Illness.* Hospital Medicine Publications, London, 1967, p. 14.

Suffering is thus intrinsically linked to the difficulty of finding meaning at the end of life. In 1982, E.J. Cassel, a physician, emphasised the intertwining of suffering and meaning: "Personal meaning is a fundamental dimension of personhood, and there can be no understanding of human illness or suffering without taking it into account[28]." Yet, according to Cassel, medicine does not sufficiently address the dimension of suffering: it reduces the scope of its intervention to the somatic and naturalises the experience of misfortune that the patient experiences as a whole. To fail to take care of suffering is to doom medical intervention to failure, not necessarily in therapeutic, physiological or biological terms, but in terms of care. It may even intensify the suffering of the person concerned, as he or she observes the non-recognition of his or her suffering.

> Suffering is experienced by persons, not merely by bodies, and has its source in challenges that threaten the intactness of the person as a complex social and psychological entity. Suffering can include physical pain but is by no means limited to it. The relief of suffering and the cure of disease must be seen as twin obligations of a medical profession that is truly dedicated to the care of the sick. Physicians' failure to understand the nature of suffering can result in medical intervention that (though technically adequate) not only fails to relieve suffering but becomes a source of suffering itself[29].

Moreover, while pain is often treated by sedation, suffering cannot be treated in this way: many stories tell of the suffering of anaesthetised people who felt no pain and could not communicate their anguish[30]. More fundamentally, suffering expresses a global existential situation experienced by one individual: it is a call, like a distress signal[31]. It refers to experiential knowledge, which needs to be recognised as such[32]. Since its inception, palliative care has stressed the importance of taking into account the suffering of people at the end of life, notably through conversation, which involves listening and dialoguing together, maintaining interest in ourselves and in one another.

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[28] Cassell, EJ., "The nature of suffering and the goals of medicine". *N Engl J Med 1982*;306:639-45, p. 134.

[29] Cassel, EJ. *N Engl J Med*. 1982; 306:639-45.

[30] Birch, J., *The Edge of Sentience: Risk and Precaution in Humans, Other Animals, and AI*. Jonathan Birch, Oxford University Press, 2024.

[31] Guérin, B., Carvallo, S., Aubry, R., *La Détresse existentielle*, Besançon, PUFC, 2025.

[32] I am fortunate too, above all, in being a doctor who isn't in a hurry, so that I have time to know and to enjoy my patients, and I very often take a portable tape-recorder round with me, which, of course, they all know about. It is a very great help, both to get permanent records of them talking about their pain and its relief, but also about their attitudes towards their illness; what they know about it, and what they find particularly hard, and it is very revealing, both for them, and about myself too when I play it back. Typescript of a talk, "I was sick and you visited me", given at St. Mary's Hospital, London, 30 May, 1961; Cicely Saunders' archive, St. Christopher's Hospice, Sydenham.

Considering the suffering of the other implies situating oneself at the level of a subjective experience expressed through a voice that addresses their distress to a community of language. Contemporary philosophy and medicine both focus rather on the content of the statement. Thus, they consider the argumentation involved in the discourse, for example when they enjoin the construction of a rational, free and informed decision under the model of consent, which often consists of "ticking boxes". Conversely, the professional's statement does not represent personal subjectivity, but is configured by the obligation to deliver clear, impartial information with tact and moderation, to help the patient make an informed decision. On the contrary, the voice indicates the intrinsic presence of one subject addressing another, but also its ability - or inability - to find, in the words of the tribe, a way of saying - or not saying - what they want to say, and to be listened to, understood, recognised in their subjectivity. Under the pretext of rationality or procedure, there is a tragic risk of only being able to express oneself through forms or ready-made formulas that prevent them from finding their voice - that is, their way of saying - a form of life appropriate to who they are. By contrast, conversation offers the necessary space-time to adjust their voice to the ear of another: it aims neither at mastery nor at a decision, but discusses experiences in all their nuances and complexity, sharing interpretations that are always uncertain, sometimes ambivalent. It expresses emotions, powerlessness and desires. It opens up an imaginary exercise: if I die tomorrow.... If I live another eight months... Would you leave? What would you do? What about our house? Do you remember?

When doctors broach the subject of death with patients, they often describe the discussion as difficult, because they feel they are stepping outside of their legitimate perimeter and broaching intimate issues which generate affects, emotions, relationships, history and even spirituality. Many patients say they have not had the opportunity to share their deep emotions about death with their oncologist[33]. They remain mute, speechless concerning their intimate lives. When they do take place, these conversations often happen at the time of a crisis, too late, for example during an emergency hospitalisation. Moreover, it is not clear who should initiate the discussion: should it be the specialists confined to their field of expertise, the nurse, the psychologist, or each individual on a visit-by-visit basis? We are currently witnessing a reinforcement of the tendency to compartmentalise roles between doctors and paramedical professionals (psychologists, sophrologists, art therapists, etc.): young doctors report feeling helpless when faced with symptoms that fall outside the strictly medical field and will tend to delegate more quickly[34]. They de-medicalise some support requests by referring them to paramedical or supportive care professionals,

[33] L. Sallnow et al. "Report of the Lancet Commission on the Value of Death: Bringing death back into life", *Lancet* 2022; 399: 837-84, p. 864.

[34] Sarradon-Eck, A. M. Dias, R. Pouchain, "Ces patients "particuliers". Comment les jeunes médecins démédicalisent les symptômes inexpliqués?" *Sciences sociales et santé*, 2020/1, 38, p. 5-30.

rather than assuming them as part of their support mission. At the same time, they categorise a group of patients as "heartsink patients", in that they go beyond the ordinary scope of care and do not really fit in with standards.

Why is it so difficult to ask the patients about their understanding of the situation, their fears, their dreams and concerns for the future, their priorities, their conceptions of values, to try and get a feel for their end-of-life experience and, possibly, to imagine what comes next? We know how essential this conversation is for making sense of the situation. Indeed, nurses report the importance of these free moments, which often take place at 2 a.m. when the hustle and bustle of the ward calms down. The nurse and patient meet simply as individuals, who recognise the importance of the radical experience of being human when approaching death[35]. They resonate with each other. Am I already dying? What does my presence mean, when I can do nothing else but be here?

As opposed to the contractual model of consent, which aims to co-construct a shared decision, conversation enables an encounter and a resonance where each person can recognise her or his own humanity through that of others. It allows emotions, silences and imagination to resonate, to evoke what is important to the individual. Stanley Cavell shows how conversation blurs the roles of expert and layman: two people talk and know that

> No man is in any better position for knowing it than any other man - unless *wanting* to know is a particular position. *And this discovery about himself is the same as the discovery of philosophy*, *when it is the effort to find answers, and permit the questions*, which nobody knows the way to nor the answer to any better than anybody else. As such, what makes it relevant to know, worth knowing? But relevance and worth may not be the issue. The effort is irrelevant and worthless until it becomes necessary to know such things[36].

Through the singularity of a conversation, everyone can reinvent themself: by finding an interlocutor capable of recognising the importance of what they are trying to say, they overcome the scepticism of having nothing to say or finding themself in a meaningless situation. Together, both experience a kind of resonance to discriminate between what is significant and what is trivial. Thus, what is important is neither

[35] Human-to-human moment between nurse, patient and their families.... These moments are epitomized in the 2 a.m. moment, when the bustle of the hospital or the home has settled, and it is just nurse and patient in solidarity. And there we are: human-to-human amid both suffering and hope with the full range of emotions possible. It is these moments when the patient might ask: Am I dying? (...) How the nurse remains present, listens, internalizes, responds, uses the silences and continues to bear witness can profoundly shape the next moments of living and dying. (...) In recognizing the profound experience of the patient facing death, the nurse also holds a mirror of reflection. (...) What am I learning in this moment, from this patient? Rosa, W. Ferrell. B., "The 2 a.m. Moment and the Art of Our Science". *Journal of Hospice & Palliative Nursing*, vol. 25, nº 3, June 2023, pp. 115-115.

[36] Cavell, S., *Must we mean what we say?* [1969], Cambridge, Cambridge University Press, 2002, p. XLII.

content nor argument, but to reach a harmony - in the musical sense of the word - which, on the horizon, symbolises the possibility of a universal agreement on what is essential when one is facing death. On the threshold of death, conversation opens the way to a shared imagination in the form of memories, desires, fears and projections. It thus constitutes a matrix for access not to knowledge, but to mutual recognition: recognising what is important, recognising a voice. Because at this very moment we are all "self-made".

3. Giving shape to the imaginary: Non-medicinal interventions in art

In addition to conversation, art offers another modality for imagining end-of-life. Indeed, palliative care units are increasingly offering art interventions to break away from a purely analytical or rational relationship and open up an imaginary matrix elaborated by patients with artists on board[37]. This is because art is a way of breaking away from rationality, letting go and experimenting with other dimensions of relationships.

Cicely Saunders was one of the first to stress the importance of symbols as a way of expressing suffering and finding meaning by opening up and exploring avenues through the imagination. As a result, the hospital in which she practiced, Saint Christopher Hospice, created a Creative Living Center to integrate art into care for patients and their loved ones, caregivers, training and research. In France, the Maison de Gardanne, dedicated to palliative care, has premises hosting artists in residence: distinct from art therapy, it welcomes artists who, through their performances and creations, enable patients to reconnect with themselves and with each other. Through art, as through conversation, the patient plays an active role, is no longer bored and even finds a sense of pleasure. This aesthetic experience improves self-esteem, restores relational availability and enriches the sense of existence[38]. According to patients' self-assessments, their overall feeling of distress diminishes: anxiety, fatigue, sadness, unease or depression after the procedure are reportedly lower than before[39]. In addition to the patient's own experience, the works of art produced can be shared throughout a community and last beyond their death. Finally, this creative process also gives another dimension to the experiences of family members and professionals. An ambitious project in the United States was launched in 1993 to transform the culture of death through art[40]. In this project, artistic intervention is not limited to

[37] Pasquet, St., Giffard, M., Chassagne, A. "Les approches non médicamenteuses en soins palliatifs: enquête sur les pratiques en France", *Médecine Palliative*, 2025, doi: 10.1016/j.medpal.2025.02.002.

[38] Taal, J. (2004), "Assumer le cancer par l'expression créative et imagination", *Revue Francophone de Psycho-Oncologie,* 1, p. 25-32.

[39] Lefevre, C., Ledoux, M. Filbert, M. Art therapy among palliative cancer patients. Aesthetic dimensions and impacts on symptoms. Palliative and supportive care. 2015, 1-5.

[40] Project on Death in America. Transforming the culture of dying: the project on death in America 1994-2003. New York: Open Society, 2004.

Clark D. The project on death in America: twenty years on. 2014; published online Sept 11.

people at the end of their lives, but concerns all citizens, to "bring death home", not just in palliative care services, but in our ordinary homes, not as a morbid obsession, but to tame it. Historically, many artists have taken up the question of death. Among others, Jenny Holzer took up the form of 'Lament' in an art exhibition combining columns and words in 1989[41]. In 2024, she invested the Guggenheim Museum with a *Light Line* multimedia exhibition on the figures of contemporary death[42]. The architecture of this New York museum draws us into a spiral comparable to Dante's descent into the circles of hell. In cinema, the multitude of films about the end of life reveals a renewed recognition of its importance.

Cavell particularly analysed the case of cinema as a medium that elicits a subjective and collective experience to explore meaning in its obscure aspect when the evidence disappears. This experience does not take the form of rationality or argumentation, but of *significance*, relevance, importance or *mattering*. Cinema makes us aware of complex emotions, relationships and situations that resonate with the viewer's own life[43]. Sometimes, a film can transform one's existence, just as an encounter can, because by dramatizing a story, cinema makes intensely real what might ordinarily seem worthless. The sharp increase in the number of films about the end of life is a sign of the renewed interest directors and viewers are taking in this stage of life: prior to the 2000s, the theme of the end of life hardly ever appeared on screen, apart from in Bergman's masterpiece *Cries and Whispers* (1972). Since the 2000s, at least one film on this theme has been released every year[44]: while we usually do everything to avoid thinking about it, cinema makes the experience interesting and important. These films do not attempt to be masterpieces, but they all explore the feelings, emotions and relationships that play out under the shadow of death, and recognise its significance. They all help to shed light on the end of life as an internal priority of our culture.

All these aesthetic initiatives (art interventions in palliative care services, artistic creations about death, films about the end of life) agree on the limits of a purely rational approach to the end of life, on the importance of imagination in developing

http://endoflifestudies.academicblogs. co.uk/theprojectondeathinamericatwentyyearson/

[41] https://www.clevelandart.org/art/2019.19. Accessed on 16.04.2025

[42] https://www.guggenheim.org/exhibition/jenny-holzer; https://www.frieze.com/article/jenny-holzer-light-line-2024-review. Accessed on 16.04.2025

[43] Cavell, S., *Pursuits of Happiness: The Hollywood Comedy of remarriage*, Harvard University Press, 1984.

[44] C'est la vie (2001), Facing Death (Elisabeth Kübler-Ross, 2003), Mar adentro (2004), Million Dollar Baby (2004), Le Scaphandre et le papillon (2007), La Vérité sur Jack (You Don't Know Jack, 2010), Les Yeux ouverts (2010), The Descendants (2011), Terry Pratchett: Choosing to Die (2011), Quelques heures de printemps (2012), La Belle endormie (2013), Miele (2013), Still the Water (2014), Before We Go (2014), La Vanité (2015), La Dernière leçon (2015), Vivre sa mort (2016), Black Bird (2019), Cherry Blossoms and Demons (2019), Tout s'est bien passé (2020), Supernova (2020), Le cahier de Tomy (2020), Les Equilibristes (2020), De Son Vivant (2021), Plan 75 (2022), The room next door (Almodovar, 2024), Le Dernier souffle (Costa Gavras, 2025).

ways of expressing, and on restoring a shared meaning of death and end-of-life. They recognise the relevance of art, precisely because it achieves a personal interpretation and can arouse shared emotions and values. Sharing meaning does not mean reaching a consensus on divisive issues such as medical assistance in dying: the pluralism of contemporary societies makes reaching any agreement on the ethical value of assisted dying or assisted suicide impossible. Nevertheless, art makes it possible to reach agreement in terms of resonance, so that together we can recognise the importance and value of this final period of life.

As an extension of these artistic productions, research based on art does not aim to discover new objects, but rather to better understand dimensions of subjectivity that are ordinarily poorly identified, but which matter intensely when you are dying[45]. It can take at least three forms: treating an artistic work as research material, considering an artistic practice as an experiment, or proposing an art intervention.

When based on works of art, art-based research is not confused with art history or art criticism, insofar as it does not claim to know more about the work, the author or the technique, but rather to capture knowledge about the world evoked through the works. In this way, the diversity of films on end-of-life issues enables us to better understand the different trajectories explored by individuals, the dilemmas experienced by loved ones and caregivers, and the emotions and suffering involved. Fiction thus plays a role analogous to that of the human and social sciences, in that it enables us to understand social and human facts[46]. The work can direct attention to elements or dimensions that are usually omitted; it can narrate and represent social facts. In the words of Howard Becker, it acts as a "vehicle of social analysis[47]", in that it can make us see, understand and feel important issues for social theory or philosophy. Indeed, art - like humanities and social sciences - considers fiction to be an intrinsic dimension of the human sphere. As such, the work embodies a fiction in action, an imagination made present and concrete through an artistic medium. It opens the way to interpretations, to apprehend the complexity and uncertainty of interpretations.

In the film *Cries and Whispers*, we perceive the exacerbated tensions of ancient relationships, which are redistributed around Agnès' end of life between her sisters, the maid, the doctor and the pastor. We also perceive how the end of her life mobilises the memories, emotions, dreams and regrets that populate the solitude of the dying person. The film stimulates our conceptual and emotional imagination to better analyse this life event[48]. Emily Dickinson's poems give words to the suffering that, for many of us, constantly threatens to destroy language: "There is a pain - so utter - /

[45] Leavy, P., *Method meets arts. Arts-based research practice*, NY-London: Guilford, 3rd ed., 2020.

[46] Beer, D. "Fiction and social theory: E-special introduction", *Theory, Culture and Society*, vol. 33, n° 7-8, 2016.

[47] Becker, H. *Telling About Society.* University of Chicago Press, 2007.

[48] Cavell, S., *Pursuits of Happiness: The Hollywood Comedy of remarriage*, Harvard University Press, 1984.

It swallows substance[49].” Nancy Huston’s novel *Dolce Agonia* (2001) features Sean Farrel in the advanced stages of cancer, who brings together a dozen friends and lovers in the evening of their lives to explore the uncertain feelings that intertwine before death. It gives the reader the impression that he is the uneasy witness of this ultimate whirl of life. Mark Rothko’s *Black on Grey* (1970) invites us to contemplate the fragile frontier between death and old age. All these contemporary works populate our “imaginary museum”, proposed by Malraux in a bid to take us out of art history, so that we could inhabit our culture through a personal shared relationship. They build a museum without walls, where, through digital reproductions, paintings, films, books, poems, sculptures, architecture, dance, music and collages find “the greatest significance of artistic style that they can adopt” and now offer “moments of art[50].”

The second modality of art-based research mobilises artistic performance to create an aesthetic form that can give us access to new ways of feeling, seeing or hearing. In particular, it enables us to take account of the affective, sensory and experiential dimensions of end-of-life, to access the truth of what a subject experiences without being that person. In this way, suffering, dereliction and fatigue can be understood through theatre, music, dance and poetry. In such cases, artists are needed to put into words, sounds, images or movements a representation which achieves a real presence. Indeed, George Steiner has explained how performance means first an experience that “*incarnates* (the notion is grounded in the sacramental) *a real presence of significant being. (...)* It is a singularity in which concept and form constitute a tautology, coincide point to point, energy to energy, in that excess of significance over all discrete elements and codes of meaning...[51]” R. Campo, a physician, underlines the extent to which the healthcare system today is unequipped to offer spaces of meaning, both for caregivers and for patients and their families. In addition to his medical duties, he is developing initiatives to recreate artistic moments, for example as editor of the “Poetry and Medicine” section of JAMA (*Journal of the American Medical Association*) or in the Arts and Humanity initiative at Harvard Medical School. Poetry can explore the importance of the end-of-life experience, precisely because it breaks with the informative and rational function of language[52].

The third modality of research based on arts conceives art as an intervention to import another way of existing into care organisations[53]. In this case, the artist

[49] Dickinson, E., Fr515, in: R.W. Franklin, *The poems of Emily Dickinson: Reading edition*. Cambridge: MA, The Belknap Press, 1999. This poem was published in 1929, then in its original version in 1955.

[50] Malraux, A., *Le Musée imaginaire. Psychologie de l'art.* Labyrinthe, 22, Geneva, 1946, p. 2.

[51] Steiner, G. *Le Sens du sens. Présences réelles*, Paris, Vrin, 1988, p. 86-87 for the english version, p. 63 for the french text.

[52] Campo, R., “Poetry and the meaning of care”, JAMA, 2024, 331/22, 1969. “Illness, and Poetry, can transform us”, JAMA, 2025. 333/4: 352.

[53] Wang Q., Coemans S., Siegismund R., and Hannes K., "Arts-based methods in socially engaged research practice: a classification framework", *Art/research International: A transdisciplinary Journal*,

intervenes as a layman in the health facility to engender a displacement, or a shift. This is the case, for example, with tango dancers, who intervene in palliative care services: this intervention may come as a surprise insofar as patients cannot dance the tango themselves, but the strength and sensuality of the dance, which intimately combine the bodies of a man and a woman, enables memories and desires to emerge. They encourage introspection but also renewed interaction. In her movie *De Son Vivant* (2021), Emmanuelle Bercot films a palliative care unit. Although she assumes a melodramatic composition, Bercot depicts the concrete elements of the care organisation set up by the department head Gabriel Sara, who regularly invites musicians and tango dancers to the Mount Sinai Roosevelt Hospital in New York[54]. Their dance portrays what ordinarily seems unspeakable and invisible, restoring the importance of feelings, regrets and desires, and rekindling the flame of life and love. It also broadens the definition of care, being not a question of acting on bodies, but of providing an opportunity to experience oneself, one's past, one's desires, one's suffering, one's dereliction. In this respect, art contributes to a reform of care[55] seeking to recognise the subjectivity of the person at the end of their life. Dance responds to a demand, rather than a need, as argued by F. Worms, following Winnicott, distinguishing between what is organic and objective, and what concerns subjectivity[56]. Levinas takes up this distinction to analyse this fundamental call for recognition and consolation, opening us up to the question of meaning. As he defends the aspect of subjectivity, he also assumes that suffering is always useless. It cannot be justified: its incommensurability with ordinary experiences must be recognised[57].

Indeed, art does not claim to heal or erase pain or death, but it does recognise the value of subjective experience - even anguished experience - the importance of suffering and the value of death, which can also become a source of creation. "A writer's work, like the water in an ever-moving well, reaches a height which is in proportion to the depth to which suffering has penetrated his soul[58]." Marcel Proust said it best. Since Dr. Rita Charon's impetus in the 2000s, narrative medicine and hospital biographies have proven, in their own way, the virtue of storytelling in giving meaning to pathological experience, and not abandoning it to scientific and technical factuality alone[59].

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vol. 2, n° 2, 2017.

[54] Bercot. E., Dossier de présentation du film *De Son Vivant*, Personal communication, October 17, 2024.

[55] Sallnow, L., *op. cit. Lancet* 2022, p. 872

[56]Worms, F., *Le moment du soin: à quoi tenons-nous?* Paris, PUF, 2010.

[57] Levinas, E., *Useless suffering, Entre nous: Thinking-of-the-other*, M. Smith, B. Harshav trans. New York: Columbia University Press, 1998, p. 94.

[58] "*Les œuvres, comme dans les puits artésiens, montent d'autant plus haut que la souffrance a plus profondément creusé le cœur*." Proust, M., "Le temps retrouvé"*, À la recherche du temps perdu,* Gallimard, La pléiade, 1989, t.4, p. 487.

[59] Charon, R., *Narrative medicine. Honoring the stories of illness*, New York, Oxford University Press, 2006.

Through these three heuristic dimensions (work, performance, intervention), art shows that we must go beyond the simple level of knowledge to recognise the importance of experience. It also reaffirms the intrinsic nature of subjective experience, thus offering opportunities for connection, resonance and empathy with the person concerned. In Cavell's words, art

> [...] magnifies the feeling and the meaning of a moment, its equal part of it to counter this tendency, and instead to acknowledge the fateful fact of a human life that the significance of its moments is ordinarily not given with the moments as they are lived so that to determine the significant crossroads of a life may be the work of a lifetime[60].

But art also opens up avenues of transformation. Aesthetic experience can leave its mark on the individual and induce a new beginning. In 2024-2025, we carried out an art intervention with doctors in the field of palliative care, medical students and artists in dance, poetry and music in partnership with the Museum of Fine Arts of Lyon. The students' verbatims provide insight into what young future doctors understand through artistic creation. First of all, they experience the expressive power of art:

> A1. What I discovered through the work of these artists, dancers, musicians, video artists or poets, was the power of art to enable expression. The work is not there to explain, but to make us feel and express. It offers an opportunity to highlight the patient's subjectivity, imagination, emotions and desires. 02.04.2025

They also observed how art enables us to be present in a way that matches the intensity of the patient's experience:

> A2. ... an intensely alive form of presence. More than gestures or words, it was looks, silences and emotions that reminded me of what the word "together" means: creating a common space where everyone has their place, and where vulnerability creates links rather than solitude. 02.04.2025

Finally, they felt transformed by the art:

> A3. ... shifted my approach to care, restoring the place of subjectivity and the human element beyond technical care. In the course of my work, I've learned that far from being a luxury, art can become a real lever for transforming the relationship between caregiver and patient. 02.04.2025

[60] Cavell, S., "The thought of movies", *Themes out of school: effects and causes.* San Francisco, CA, North Point Press, 1984, 3-26, p. 11.

Under the shadow of death, the aesthetic relationship takes precedence over the clinical result in that it gives meaning to these borderline situations. It also enables us to give form to the unspeakable and the invisible, and to create a link, even when ordinary speech is no longer adequate. For example, one student emphasised that he had understood the experience of fatigue that a person at the end of life can feel through a theatrical scene, by drawing on his own experience of fatigue exacerbated by the sensitivity of words. As a result of this aesthetic experience, several students decided to change their practice, becoming less focused on the result and more attuned to listening and wanting to enter into a relationship with the person. Another student drew on the etymology of palliative - *pallium* - blanket or cloak, and spoke of art "as a cloak (that takes care of someone)" for both patient and caregiver. Through art and imagination, they initiated self-education.

Imagination is at the heart of a fundamental quest for meaning about end-of-life and death, as part of a reverie - in Rousseau's sense of the term - it is radically transformative, or "transmutative" following Starobinski's words: the self is transmuted, and the pain is converted in the feeling of a presence[61]. Only death interrupts the *Rêveries du promeneur solitaire*[62] in the spring of 1778: at the end of an existence marked by persecution and misfortune, imagination opens up an experience of significance and a source of creation. Today, this imaginary world takes on other public forms through healthcare institutions and research: artistic media, conversation, interventions of artists driven by convictions shared with doctors, the commitment of associations offering time and space in art venues to share such aesthetic explorations[63]. In this respect, all these initiatives are a reminder that the meaning one can give to his or her experience is never purely private but is woven through lines of connection between the subject and culture, as imagination confronts his or her culture's representations and meanings with his or her own words and life[64]. These initiatives inaugurate a culture capable of accompanying suffering, end-of-life and mourning, able to give meaning to the tragic experience of death: a caring culture[65]. Rosa distinguished between the mute relationships of use and logical analysis on the model of efficiency and the benefit-risk balance, where things tell us nothing, and the horizontal, diagonal or vertical relationships of resonance that come to make sense[66] by weaving non-utilitarian links with loved ones, places, nature, with care professionals and with artists and art open up a sphere of resonance.

[61] Starobinski, J., "Rêverie et transmutation", *Jean-Jacques Rousseau et la transparence et l'obstacle, suivi de sept essais sur Rousseau*, Paris, Gallimard, 1971, pp. 415-429, p. 420, 427.

[62] Rousseau, J.-J., *Les rêveries du promeneur solitaire, Œuvres complètes*, Paris, Gallimard, La Pléiade, t.1.

[63] https://passeur-de-mots.fr/

[64] Cavell, S., *The Claim of reason, Wittgenstein, Skepticism, Morality and Tragedy*, New York, Oxford University Press, 1979, p. 125.

[65] Tronto, J. *Le Risque ou le care ?* Paris, PUF, 2012.

[66] Rosa, *Resonance, ibid.,* p. 195-306.

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Imagination in the scientific process

Jean-Hugues Barthélémy

Abstract

This article aims to demonstrate that the theory of multi-modal scientific decentering, far from neglecting the question of scientific imagination, in fact provides a renewed framework through which to approach it. Initially introduced in *La Société de l'Invention* (2018) and further elaborated in its methodological sequel *La Philosophie du Paradoxe* (2024), the theory of multi-modal scientific decentering had, until now, not directly addressed the issue of scientific imagination. This omission stemmed from the fact that the theory arose in response to a more fundamental and global dual problem. For this reason, we first recall what is meant by "multi-modal scientific decentering". Only in a second step we address the specific nature of scientific imagination, understood precisely as shaped and constrained by the methodological decentering unique to each scientific discipline. Scientific imagination, inasmuch as it serves the aim of explaining phenomena, is neither merely reproductive nor freely productive (or creative) as is artistic imagination ; rather, it must invent what responds to a problem posed by the observed phenomena. Moreover, an exemplary instance of scientific progress — such as the transition from Newtonian to Einsteinian physics, which will be discussed here — was made possible through a form of productive imagination that operated not by addition but by subtraction : commonsense certainties, such as that of absolute simultaneity, became mere hypotheses, now deemed unnecessary.

Keywords *: analogy, multi-modal decentering, scientific imagination, paradox, Simondon*

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Résumé :
Cet article montre en quoi la théorie du décentrement scientifique pluri-modal, loin de négliger la question de l'imagination scientifique, permet de la revisiter. Cette théorie est née dans l'ouvrage *La Société de l'invention* (2018), puis a été précisée dans son complément méthodologique *La Philosophie du paradoxe* (2024). Si elle n'avait pas exploré, jusqu'ici, la question de l'imagination scientifique, c'est parce que cette théorie était née d'un double problème plus fondamental et plus global. C'est pourquoi est rappelé dans un premier temps ce qu'il faut entendre par le « décentrement scientifique pluri-modal ». Dans un second temps seulement, est soulevée la question de la spécificité de l'imagination scientifique, telle qu'elle est justement nourrie et contrainte par le décentrement méthodologique de chaque science. L'imagination scientifique, dans la mesure où elle est au service d'une recherche d'explication des phénomènes, n'est ni simplement reproductrice ni librement productrice (ou créatrice) comme l'est l'imagination artistique, mais elle doit créer ce qui répondra à un problème posé par les phénomènes observés. En outre, un progrès scientifique exemplaire, comme celui qui sera évoqué ici et qui a fait passer de la physique newtonienne à la physique einsteinienne, a pu mettre en œuvre une imagination productrice ne consistant pas à ajouter mais à retrancher : des évidences du bon sens comme celle de la simultanéité absolue y deviennent de simples hypothèses, désormais inutiles.

***Mots-clés** : analogie, décentrement multi-modal, imagination scientifique, paradoxe, Simondon*

Introduction

This article aims to demonstrate that the theory of multi-modal scientific decentering, far from neglecting the question of scientific imagination, in fact provides a renewed framework through which to approach it. Initially introduced in *La Société de l'Invention* (2018) and further elaborated in its methodological sequel *La Philosophie du Paradoxe* (2024)[1], the theory of multi-modal scientific decentering had, until now, not directly addressed the issue of scientific imagination. This omission stemmed from the fact that the theory arose in response to a more fundamental and global dual problem — one that necessitated the construction of a new general theoretical framework before turning to more specific questions such as that of imagination and its scientific modality.

[1] Jean-Hugues Barthélémy, *La Société de l'Invention : Pour une Architectonique Philosophique de l'Âge Écologique*, Paris : Éditions Matériologiques, 2018 ; *La Philosophie du Paradoxe : Prolégomènes à la Relativité Philosophique*, Paris : Éditions Matériologiques, 2024.

This broader and more fundamental dual problem can be articulated as follows :
- On the one hand, if philosophy has remained, to this day, the "battleground" that Kant believed could be confined to "speculative metaphysics" — from which he claimed to depart via the *Critique*, understood as a form of knowledge about knowledge —, then we must entertain the possibility that philosophy's true vocation, as a mode of self-knowledge, lies not in producing doctrines that claim strict forms of knowledge and thus perpetuate endless confrontation, but rather in inventing an auto-pluralizing approach. The fundamental aim, therefore, is to establish a new terrain for discussion rather than to propose yet another doctrine[2] ;
- On the other hand, the distinction that must also be revisited between science and philosophy entails, for philosophy, a form of humility — one that calls for attentive engagement with a discipline whose strength lies in its capacity to conceptualize scientific progress without subordinating the idea of objectivity to the value of "Truth" understood as a horizon : namely, the historical epistemology inaugurated by Gaston Bachelard[3]. At this juncture, the theory of multi-modal scientific decentering has established a dual critical dialogue with Kant and Popper, aiming to show that objectivity is less an ever-receding horizon — as it is often conceived — than a methodological quality that manifests in diverse modalities depending on the science in question, with the common thread being a surpassing of common sense ;

It is this second, properly epistemological problem that will serve here as the framework for turning now to the question of scientific imagination. For this reason, we will first recall what is meant by "multi-modal scientific decentering" — a notion that neither Kant nor Popper clearly conceptualized. Only in a second step will we address the specific nature of scientific imagination, understood precisely as shaped and constrained by the methodological decentering unique to each scientific discipline. Two essential points may be introduced here. First, scientific imagination — inasmuch as it serves the aim of explaining phenomena — is neither merely reproductive nor freely productive (or creative) as is artistic imagination ; rather, it must invent what responds to a problem posed by the observed phenomena. Second, an exemplary instance of scientific progress — such as the transition from Newtonian to Einsteinian physics, which will be discussed here — was made possible through a form of productive imagination that operated not by addition but by subtraction : commonsense certainties, such as that of absolute simultaneity, became mere hypothe ses, now deemed unnecessary. These two essential and interdependent points characterize scientific imagination as a very particular kind of productive imagination, one placed in the service of the ascetic rigor demanded by confrontation with

[2] See Barthélémy, *La Philosophie du Paradoxe, op. cit*., § 32.

[3] On Bachelard, see Dominique Lecourt, *L'épistémologie historique de Gaston Bachelard*, Paris : Vrin, 1970 ; Vincent Bontems, *Bachelard*, Paris : Les Belles Lettres, 2010. On the relationship of filiation between the theory of multi-modal scientific decentering and Bachelardian historical epistemology, see Barthélémy, *La Philosophie du Paradoxe, op. cit*., §§ 5 and 19.

the real, which it seeks to render intelligible. The first of these two points, as we shall see, defines the framework within which analogy may play a role in science — though only as a heuristic tool. The second point defines the framework in which the scientific truths progressively discovered since Galileo constitute, in their ever more pronounced surpassing of the evidences of common sense, a succession of paradoxes that increasingly unsettle common sense.

The theory of multi-modal scientific decentering was developed precisely in *La Philosophie du Paradoxe* as a dual rehabilitation of paradox — both in philosophy and in science — while also reaffirming its often-overlooked distinction from contradiction. At this level, the heterogeneity between philosophical "self-knowledge" and the actual knowledge constructed by science in no way prevents their shared transcendence of common sense from placing them both in affinity with paradox. As for analogy, the same work rehabilitated it as constitutive of philosophy — on the condition, however, that it be redefined as a translational operation involving three terms rather than four[4]. In the sciences, analogy is merely heuristic, and the task here will be to treat it as a modality of imagination that is both nourished and constrained by multi-modal methodological decentering.

1. The theory of multi-modal scientific decentering : a recapitulation

The theory of multi-modal scientific decentering, as it was first introduced in *La Société de l'Invention* and later refined in *La Philosophie du Paradoxe*, addresses a concern that ultimately lies beyond any strictly epistemological issue. For this reason, that deeper concern — which pertains to the very status of philosophy in its distinction from science — will not be discussed here, though it was briefly noted in the introduction. The epistemological concern, by contrast, is the renewal of the theory of knowledge through a dual critical dialogue with Kant and Popper.

The first of these two major figures is unable to account for either the extremely late emergence of genuinely scientific physics — born only in the seventeenth century — or for its revolutionary capacity to transition from Newtonian space and time (which Kantian criticism aims to philosophically ground) to the spacetime of Einsteinian relativity. In Kant's system, Newtonian physics is both merely human — since non-noumenal — and definitive as knowledge of phenomena. Space and time are at once absolute and marked by ideality, being nothing more than the "a priori forms of sensibility".

Popper, by contrast, is profoundly driven by the intention to account for the capacity of physical knowledge to progress. This is why he emphasizes, within his critical rationalism, the importance of the Einsteinian breakthrough. His other fundamental and original concern is to establish a "demarcation criterion" between, on one hand, the "empirical sciences" — which would be more accurately described as

[4] See Barthélémy, *La Philosophie du Paradoxe, op. cit*., §§ 13 and 30.

experimental sciences, if instrumentally grounded — and, on the other, metaphysics, pseudo-sciences, as well as logic and mathematics[5]. Popper frequently recalls that it was, in fact, his youthful suspicion toward the scientific pretensions of psychoanalysis and Marxism that proved decisive for this project. Now, Chapter 4 of *La Philosophie du Paradoxe* has shown that, with regard to the issue of scientific progress, Popperian falsificationism grounds this progress less on the idea of an objective method than on that of a vague "critical spirit" traced back to the pre-Socratics — an impulse allegedly interrupted by Aristotelian "dogmatism"[6]. For this reason, Popper — curiously convinced that dogmatism is the true cradle of irrationalism — explicitly embraces a proximity between his critical rationalism and a new form of skepticism : on the one hand, scientific knowledge is said not to be discontinuous from that of common sense, which is thought capable of self-criticism ; on the other hand, this self-criticism is claimed to be the sole and genuine secret of scientific progress, which in turn is said to be the only thing distinguishing pre-critical myths from what Popper, at times, even dares to call the scientific "myth"[7].

The theory of multi-modal scientific decentering aims to be at once more coherent than Popperian falsificationism, more flexible, and less ambiguous in its capacity to distinguish itself from any form of skepticism :

- More coherent, because unlike Popper, it is not torn between, on the one hand, the idea that the progression from Newton to Einstein constitutes a relativization that renders Newtonian physics what Einstein called a "borderline case", and, on the other hand, the view — taken up and amplified by the relativist theses of Thomas Kuhn — that Newtonian physics is simply refuted rather than reinterpreted as an approximation[8]. The theory of multi-modal scientific decentering understands the specific methodological decentering of physics — its distinctive mode of methodological decentering — as based, from Galileo through Einstein and beyond, on a dual mathematical-experimental/instrumental mediation. Through this mediation, a methodological objectivity is produced, ensuring a rupture with the physics of mere common sense — exemplified by Aristotle —, of which the Galilean *Dialogue Con-*

[5] Popper himself at times contributed to the neglect of logic and mathematics within the second pole of his demarcation criterion, as well as to the blurring of the distinction between metaphysics and pseudo-sciences — such as astrology. This is why it must be continually emphasized that : a) the demarcation is not, in fact, between 'science and non-science', but rather between the 'empirical sciences' on the one hand, and on the other, any discipline that is at times scientific without speaking of the world, and at other times speaks of the world without being scientific ; b) his own discourse openly assumes a dual 'metaphysical and logical' character when it reveals that the deeper meaning of falsificationism derives from 'fallibilism'. On this point, see Barthélémy, *La Philosophie du Paradoxe, op. cit*., § 20, B).

[6] On this point, see Barthélémy, *La Philosophie du Paradoxe, op. cit*., § 19, A).

[7] On Popper's claim of a proximity between his critical rationalism and a new form of skepticism, see Popper, *Realism and the Aim of Science* (*Postscript to The Scientific Discovery*, Vol. 1), London : Hutchinson, 1983, Chapter 1, 2., I ; and Barthélémy, *La Philosophie du Paradoxe, op. cit*., § 20, A).

[8] For a renewed critique of Kuhn's discourse, see Barthélémy, *La Philosophie du Paradoxe*, *op. cit*., § 22.

cerning the Two Chief World Systems marks the final naïveté within the properly scientific domain[9] ;
- More flexible, because it does not require the exclusion from the scientific domain of a discipline such as psychoanalysis, which possesses its own distinctive mode of methodological decentering — one whose singularity and complexity account for its very late emergence and for the less assured nature of its progress. Moreover, here again, Popper reveals a lack of coherence when his texts are examined closely[10] ;
- Less ambiguous, finally, because it also embodies an anti-dogmatic rationalism which, in its double struggle against irrationalism and dogmatism, does not need to align itself with any new form of skepticism. This stems from the fact that objectivity, instead of being subordinated to the metaphysicians' value of Truth and conceived as a horizon — by definition, forever out of reach —, is here rethought as a methodological quality grounded in decentering. It is this decentering that allows the subject to reconstruct itself beyond the subject of common sense, as is paradigmatically the case in physics, where the knowing subject reconstructs itself through the dual mathematical-experimental/instrumental mediation[11]. It is this very methodological objectivity that enables progress — understood as, by nature, indefinite — and not, conversely, progress in knowledge that would ground objectivity if this one is conceived as a horizon that retreats the more one advances. That conception, characteristic of Popper's falsificationism, repeatedly and on principle refuses the break between the subject of common sense and the knowing subject.

2. Scientific imagination and the heuristic role of analogy

We may now turn to the question of scientific imagination — a topic which *La Philosophie du Paradoxe* had only touched upon in passing. Like any human subject, the knowing subject in science demonstrates a productive or creative imagination that is essential to his or her activity and its progress. Yet due precisely to the idea of a necessary progress in knowledge, scientific imagination, unlike artistic imagination, possesses a kind of freedom that remains under constraint. Scientific imagination can, of course, be subdivided into various types of mental operations, all of which involve what we commonly call "imagination". To propose an explanatory hypothesis is to engage the imagination. To invent a thought experiment is likewise to engage the imagination. But regardless of the differences between these types of mental operations, imagination functions in each case only insofar as it serves the pursuit of knowledge of the real. This is why scientific imagination — even though it is productive rather than merely reproductive — remains an imagination under control. It is inscribed within the broader framework of multi-modal methodologi-

[9] On Galileo's decisive role, see especially Stillman Drake, *Galileo Studies*, University of Michigan Press, 1970 ; and for an assessment, see Barthélémy, *La Philosophie du Paradoxe, op. cit*., p. 194-196.
[10] See Barthélémy, *La Philosophie du Paradoxe, op. cit*., p. 265-267.
[11] See Barthélémy, *La Philosophie du Paradoxe, op. cit*., § 15, A).

cal decentering discussed above. Since, as previously noted, each science possesses its own specific mode of methodological decentering, we shall focus here on that paradigmatic form of decentering : the mathematical-experimental/instrumental decentering of the knowing subject in physics — as the first natural science to become methodologically objective.

When the knowing subject in physics thinks the concepts of "mass" or "velocity", he or she generates these representations within a methodological framework governed by a dual necessity : that the concepts can be constructed in connection with mathematical formalism, and that the hypotheses in which these concepts acquire meaning can be tested through instrumented experiments — experiments that serve as an interface with the mathematical formalism. Here, a parenthesis is warranted : *La Philosophie du Paradoxe*, and indeed already *la Société de l'Invention*, began to develop the idea that if physics is the queen of the natural sciences, it is because its object lends itself to a mathematization that interfaces with laboratory instrumentation. And this mathematical-instrumental interface is grounded in the fact that mathematical operations constitute both a form of virtual technique and a formal language[12]. Returning from this parenthesis, it must be emphasized that in its progress — nourished by the extraordinary theoretical imagination of physicists —, physics subjects that decisive theoretical imagination to the equally decisive law of mathematical-experimental/instrumental reason. In so doing, it enables the knowing subjects to deepen their decentering and obliges them to continually redefine their objects.

Let us consider the example of the representation of the electron, as Michel Bitbol summarizes its "destabilizing transfigurations" :

> The name "electron," derived from the Greek word meaning "amber", was first used during the second half of the nineteenth century to denote a simple, indivisible, and measurable unit of electric charge. Taking advantage of new trajectory detection methods (such as Wilson's cloud chamber), the electron was, at the turn of the nineteenth and twentieth centuries, ascribed a "corpuscular" mass and localization, thus shifting from the category of quantity (elementary charge) to the category of substance (the thing bearing that elementary charge). Then, in the mid-twentieth century, following the quantum revolution, the electron changed status once more, becoming — under a somewhat misleading name — a quantized excitation mode of the "electronic field".[13]

[12] In conclusion, we will see that there is a connection between this fundamental techno-linguistic duality of mathematics and the contemporary ways of conceiving the genesis of the human from the primate — that is, anthropogenesis.

[13] Michel Bitbol, *Maintenant la Finitude : Peut-on penser l'Absolu ?*, Paris : Flammarion, 2019, p. 50 (our translation).

These "destabilizing transfigurations", which Bitbol also characterizes as the "irresistible drift in the meaning of a scientific term"[14], clearly emerge here as constituting, at once, a succession of discoveries that are only made possible by the ever more advanced mathematization and experimentation of theoretical imagination — an imagination that is itself subject to evolution[15]. Thus, the formidable theoretical imagination of the great scientists — creative rather than merely reproductive (as is the case with memory, which explains nothing) — is also not purely free, like that of the artist, who has nothing to explain. Rather, it is both inspired and constrained by methodological decentering, since it must account for phenomena in an increasingly legislative (or nomological), explanatory, and predictive manner in order to advance knowledge. This is why the theoretical imagination of the physicist must be, at least potentially, mathematizable and experimentable — criteria which define the mode of decentering specific to physics, insofar as its object is non-living and therefore uniquely suited to such methodological demands.

The subordination of specifically scientific productive imagination to the demands of the process of knowing reality — as these are embodied each time in a defined mode of methodological decentering — further explains why analogy can only play a heuristic role in science. On the one hand, an analogy in science is always imagined in relation to a problem to be solved, which defines the framework that constrains its development. On the other hand, this imagined analogy does not possess any demonstrative value in itself. It is well known that in physics, for example, a discovery often originates in the mental operation by which an analogy is imagined between two phenomena, themselves understood as relations — since any analogy is an identity between two relations, not a resemblance between two things[16]. Yet this imaginative and original intuition does not allow the physical analogy to play more than a heuristic role, and this is no longer a matter of debate. Chapter 2 of *La Philosophie du Paradoxe*, which is devoted to the question of analogy in science and philosophy, has suggested that if analogy thus possesses only heuristic value and not a constitutive one for scientific knowledge, it is because it is linked to the contingency of discovery in contrast to the content of knowledge that is discovered. The imagined analogy cannot become constitutive of scientific knowledge as demonstrated knowledge, and must be limited to playing a heuristic role, because it is an initial intuition that pertains to the contingency specific to what Hans Reichenbach called the "context of discovery," as opposed to the necessity that defines the "context of justification"[17].

[14] *Ibid*., p. 51 (our translation).

[15] Bitbol, on the following page of his text, appears, for his part, to set in opposition the mathematico-experimental/instrumental process of decentering and the notion of discovery. I have cited and discussed his remarks on pages 192–195 of *La Philosophie du Paradoxe*.

[16] See Barthélémy, *La Philosophie du Paradoxe, op. cit*., § 9, A).

[17] See *ibid*., § 9, B).

3. The Einsteinian paradigm of imaginative elimination of hypotheses and the role of paradoxes in science

Scientific imagination is not only characterized by its simultaneous creativity and constraint through the methodological decentering of which each science determines the mode appropriate to its object. Precisely because of this methodological decentering, which gives science the vocation of breaking with common sense in order to institute itself as capable of progress, it is driven to question the naïve presuppositions of common sense and to relativize even what common sense considers to be absolute certainties and unique truths. This is why the creative and conceptual imagination of science may paradoxically appear as eliminative rather than additive. And this paradox compounds the fact that, by surpassing the apparent certainties of common sense, science continuously discovers truths that are themselves increasingly paradoxical. Before returning to this second point — which was the main topic of Chapter 1 of *La Philosophie du Paradoxe* —, let us illustrate the first point with what may well serve here as a paradigm : the birth of the theory of special relativity.

Let us return, then, to the most decisive source of this theoretical revolution, whose full realization was enabled by Einstein. Shortly before writing the four articles of his "annus mirabilis" (1905), Einstein had read *Science and Hypothesis* (1902) by Henri Poincaré, in which the following four successive assertions could already be found :

1. There is no absolute space, and we can conceive only relative motion […]
2. There is no absolute time […]
3. Not only do we not have direct intuition of the equality of two durations, but we do not even possess that of the simultaneity of two events occurring in different places […]
4. Finally, our Euclidean geometry is itself but a kind of linguistic convention […][18]

In 1905 and 1906, Poincaré would also show that the transformations of the equations of the electromagnetic field — named "Lorentz transformations" by him — form a group, and he would introduce the idea of a "gravitational wave", supposing that gravity propagates "at the speed of light". He would even anticipate Hermann Minkowski by introducing time as a fourth imaginary coordinate, as well as the four-dimensional formulation that Minkowski would refine in 1908.

Nevertheless, in *Science and Hypothesis*, Poincaré provisionally accepted absolute time and Euclidean geometry, while Einstein boldly rejected such assumptions. What characterizes Einstein is precisely his willingness to question commonly accepted certainties. The theoretical difficulties of the time provided the opportunity : Hendrik Antoon Lorentz, for his part, had been forced to posit no fewer than eleven

[18] Henri Poincaré, *La Science et l'Hypothèse*, Paris : Flammarion, 1902, p. 111-112 (our translation).

hypotheses to account for the phenomena. Einstein's imaginative genius lies in his capacity to simplify the theory by abandoning presuppositions hitherto considered absolute and indisputable. This simplification is based on just two principles : the principle of relativity, which affirms the invariance of physical laws in all inertial reference frames, and the principle of the invariance of the speed of light (c). The former was known since Galileo, but it is now extended — beyond the mechanics of material bodies — to optics and electromagnetism. The invariance of c, although already accepted, becomes in Einstein's hands a foundational principle. As a result, the many hypotheses posited by Lorentz to explain the electromagnetism of moving bodies become unnecessary.

Let us now turn to the second point. The new theoretical framework enabled by Einstein — building in part on Poincaré — clashes directly with common sense. And it is precisely this that makes Einstein's intellectual gesture so daring. Indeed, the paradoxes inherent in the theory of relativity are in fact the culmination of an ever-deepening divergence between scientific truth and common sense. For common sense, it remains difficult to accept, for instance, that the Earth is in motion ; even its sphericity only became "obvious" thanks to the modern ability to observe our planet from space. As Bachelard noted, physical truths always arise in spite of, or even against, apparent evidence. The deepening of methodological decentering that defines Einsteinian relativity is thus not merely a surpassing of naïve common sense — but of common sense in its more developed, yet still fundamentally intuitive, forms. In general, no scientific conquest of truth occurs without the ability to recognize that certain apparent contradictions are merely subtle para-doxes — false contradictions, confused by the *doxa* with real ones[19]. This was already the case with the sphericity of the Earth : the scientific paradox is that the Earth is spherical, and yet no human being has their head "downward". The resolution of the paradox — that is, its constructive integration — lies in understanding that in the universe, there is no absolute "up" or "down" ; these directions are relative to a center of gravitational attraction.

Returning once more to Einstein : what follows from all this is that the profound divergence between Einsteinian physics and common sense extends first and foremost to what underpins the latter— namely, the perceptual evidence of a Euclidean space and a time understood, as Kant held, as the object of an "inner sense". In special relativity, space and time are no longer heterogeneous realities but one and the same : spacetime. Minkowski, who would deepen special relativity[20], established

[19] On this point, see Barthélémy, *La Philosophie du Paradoxe*, Chapter 1.

[20] The new interpretation of the theory of special relativity proposed by Minkowski in 1908 initially unsettled Einstein, but it later exerted a decisive influence on his work and even made general relativity possible. It should also be noted that in Minkowski's text, the shift to the revolutionary concept of spacetime is not associated with a move away from perception ; on the contrary, Minkowski connects this concept to the fact that every place is perceived at a given moment, and conversely, every moment is observed in a particular place. However, this in no way invalidates our thesis concerning the connection between common-sense evidence and perceptual evidence — if it is true, for example, that the 'moment'

that this revolutionary theory implies a four-dimensional, non-Euclidean space. More radically still, Minkowski introduced the concept of "proper time" derived from the spacetime metric — a concept that would be preserved but redefined in general relativity. Every physical particle possesses its own proper time. There is no longer an absolute time that could define the simultaneity of two events ; the concept of proper time integrates both time and distance. Proper time is what separates two events on the same trajectory in spacetime. Its properties belong neither to classical distance nor to classical absolute time. Astronomy, when it expresses distances in "light-years", illustrates how the concept of distance becomes integrated into proper time.

General relativity, in turn, introduces a new class of spacetimes that are not merely Minkowskian but Riemannian, named after Bernhard Riemann. As a new theory of gravitation, general relativity posits curved spacetimes, whereas Minkowskian spacetime was flat. Not only is it unnecessary to form an image of a curved four-dimensional spacetime, but it is likely impossible to do so correctly. This observation deepens the idea that the distancing from common sense is above all a distancing from the perceptual evidence that feeds it. For if it is impossible to form a proper image of four-dimensional spacetime curvature, it is because any figuration remains bound to perceptual constraints. The productive and conceptual imagination demonstrated by contemporary geometry and Einsteinian physics transcends all perceptually conditioned image.

4. Revisiting Simondon's theory of the "cycle of images"

To conclude with three ideas for a future research program, I must first evoke the theory proposed in 1965–1966 by the French philosopher Gilbert Simondon in his lecture course *Imagination and Invention*[21]. Simondon sought to renew the theory of imagination by focusing on the question of images as they traverse the psychic development of both human and animal subjects, from pre-perceptual motricity to symbolism. This perspective is commendable for its emergentist approach, as is typical in Simondon's work[22]. However, it lacks consideration of scientific and conceptual imagination in its capacity to transcend images. Hence, the research program on

at which every place is perceived, according to Minkowski, is not, strictly speaking, the duration as it is perceived by the internal sense. In our view, there is here a philosophical misunderstanding on Minkowski's part when he grounds his revolutionary concept of space-time in the claim that 'the objects of our perception invariably involve both place and time combined' (*in* H. A. Lorentz *& al*., *The Principle of Relativity : A Collection of original Memoirs on the special and general Theory of Relativity*, Arnold Sommerfeld (dir.), Londres, Methuen, 1923, p. 76).

[21] Gilbert Simondon, *Imagination et Invention (1965-1966)*, Chatou : éditions de la Transparence, 2008.

[22] For an overview of Simondon's work in general, see Barthélémy, *Simondon*, Paris : Les Belles Lettres, 2014. On the question of a general and emergentist ontology, following and going beyond the one proposed by Simondon in his major work *Individuation in the Light of Notions of Form and Information*, see Barthélémy, *La Société de l'Invention*, *op. cit*., chap. VI.

which I will conclude will suggest the necessity of going beyond both Kant—theorist of the "a priori schematism of transcendental imagination" — and Simondon.

Simondon's theory of the cycle of images examined what he called "pre-perceptual images", then "intra-perceptual images" followed by "memory-images" and finally "symbols", culminating in a treatment of invention as a "concretization" which marks the beginning of a "new cycle of relation to the real"[23]. This theory offered a genetic (i.e., developmental) perspective that renewed the problem of imagination by treating images as a cycle linking pre-perceptual motricity, perception, memory, and symbolization. Its final themes were art and technical invention. But for this very reason, Simondon did not address productive imagination in its scientific modality — nor, more broadly, did he develop a strict theory of knowledge. The theory of multi-modal scientific decentering, which engages in critical dialogue with both Kant and Popper, reopens the question of objectivity, central not only to Kantian epistemology but also to Popper's "problem of demarcation" — itself formulated with reference to Kant. Yet the fact that the theory of multi-modal decentering revisits its objectivity does not prevent it from also incorporating imagination, specifically in its scientific modality. It will therefore be helpful to briefly recall the merits of Simondon's theory of the cycle of images as a renewed theory of imagination, before returning, in conclusion, to the issue of scientific imagination as that which transcends all image.

Simondon's *Imagination and Invention* follows his substantial *Course on Perception*[24], one of whose merits was to think perception in its relation to the two other great dimensions of the animal and human subject : action and emotion — three dimensions that are at once irreducible and mutually constitutive. In *Imagination and Invention*, the image is defined rather classically as "a concrete representation with sensory content constructed in the absence of sensory stimuli — or appearing in the absence of such stimuli"[25]. Yet this "absence of sensory stimuli" is rethought as a capacity for anticipation that far exceeds imagination conceived as a mere supra-perceptual faculty : here, the image is also infra-perceptual, embedded in basic motricity, and intra-perceptual — as it already was in the *Course on Perception* — before becoming supra-perceptual through memory-images that evolve into "symbols". This defines the "cycle of images". For Simondon, the symbol resolves tensions arising from the accumulation of memory-images through a formalization and also prepares for an externalization of universal value. Thus, the cycle culminates in the invention of a new relation to the real, with the invention of a reality that can exist independently of its producer.

Another merit of *Imagination and Invention* lies in its sketch of the "object-image" thesis — later developed by Bernard Stiegler in *Technics and Time*, drawing on

[23] Simondon, *Imagination et Invention, op. cit.*, p. 138.
[24] Simondon, *Cours sur la Perception (1964-1965)*, Chatou : éditions de la Transparence, 2006.
[25] Simondon, *Imagination et Invention, op. cit*., p. 101.

André Leroi-Gourhan's paleoanthropological work *Gesture and Speech*. There, the artifact is seen as a "crutch of the mind" — or "prosthesis" in a new sense[26] :

> Circular causality, which proceeds from the mental to objective reality through cumulative social processes, also proceeds from objective reality to the mental. […] Nearly all objects produced by humans are to some extent object-images ; they bear latent meanings — not only cognitive, but also conative and affective-emotional ; object-images are almost organisms, or at least germs capable of being revived and developed within the subject.[27]

What Simondon calls the "image-object", embedded in object-images, enables these objects to retroactively nourish the human mind that produced them. In Stiegler, this insight is extended via the process of memory externalization through artifacts — first understood by Leroi-Gourhan in his study of the human becoming of the primate. Stiegler's thesis is that this externalization of memory through artifacts, from the earliest flint tools onward, is the condition for the development of true human psychic interiority[28].

Conclusion : three ideas for a research program

It will be especially fruitful to explore how Simondon in *Imagination and Invention*, and Stiegler in volume 3 of *Technics and Time*, rediscover — albeit in a "genetic" (Simondon) or "a-transcendental" (Stiegler) manner — the Kantian theme of that "hidden art in the depths of nature" that was, in the *Critique of Pure Reason*, the schematism of the imagination. Three ideas should be further developed to clarify the new contribution of the theory of multi-modal scientific decentering to the question of scientific imagination as transcending all image :

- First, though neither empiricists, Simondon and Stiegler have the merit of asserting — against Kant's transcendental and a priori perspective — that the image precedes the scheme. In Kant, the schematism of the imagination ensures that a priori concepts of the understanding can apply to the data of sensible intuition (perception) : each category of the understanding has its transcendental scheme, which provides meaning by unifying the various of intuition in a rule-governed way. Schematism pertains to the productive imagination as a priori and irreducible to reproductive imagination. This transcendental approach cannot account for the derivation of human faculties from the prehuman, whereas Darwinian insights reveal that the human subject originates in the primate ;

[26] Bernard Stiegler, *Technics and Time*, Vol. 1, 2 & 3, Stanford University Press, 1998, 2009 & 2010 (French edition : Paris : Galilée, 1994, 1996 & 2001).

[27] Simondon, *Imagination et Invention, op. cit.*, p. 13.

[28] See Stiegler, *Technics and Time*, Vol. 1, *op. cit*.

- Second, unlike Simondon, Stiegler revisits the anthropogenesis scenario formulated by Leroi-Gourhan in terms of "language-technics coordination" to explain the genesis of human mental faculties — including imagination. In Leroi-Gourhan, this coordination replaced and surpassed the "face-hand coordination" of the prehuman, who had not yet stood upright to enable the "liberation of the hand" and the "liberation of speech". For Stiegler, language is now subsumed under technics as a global phenomenon and as the "prosthetic condition" of properly human consciousness ;
- Third, unlike Simondon and Stiegler, the theory of multi-modal scientific decentering explicitly and rigorously confronts the difficult question of scientific imagination as transcending all image. This text marks the beginning of that treatment, which must be extended by connecting the problem of scientific imagination — and its specificities — with the issue of anthropogenesis as the genesis of human faculties. In *La Société de l'Invention*, neuroscientific data[29] were recalled to support a new hypothesis : technics is neither what encompasses language (as in Stiegler) nor merely coordinated with it (as in Leroi-Gourhan) ; rather, it is what existed separately in prehuman forms and progressively interpenetrated with vocal communication to generate, on the one hand, systems of interrelated objects, and on the other, grammaticalized languages. Mathematics, as the purest expression of this progressive interpenetration, are simultaneously entirely a language and entirely technical operations. They are also the site of the analogy of proportion : A is to B as C is to D — the paradigm of imaginative operation as it functions in science to transcend all image.

[29] For these neuroscientific data, see Barthélémy, *La Société de l'Invention, op. cit*., § 9.

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Castoriadis's Language of Radical Imagining, in light of Aristotle and Saussure on Signitive Imagination

Le langage de l'imagination radicale de Castoriadis, à la lumière d'Aristote et de Saussure sur l'imagination signitive

Dennis L. Sepper

Abstract

Cornelius Castoriadis, in *The Imaginary Institution of Society* (*IIS*), offered the late twentieth century a powerful account of the role of imagination in the creation of society and all its particular institutions. Drawing especially on Immanuel Kant's schematism and Sigmund Freud's derivation of symbols from conscious and unconscious desire, Castoriadis showed that both the natural and the social worlds are organized by the basics of ensidic logic (sets plus identity and noncontradiction), but that they achieve experiential density adequate for living in community only through the institution of practices understood according to networks of symbols that constitute the social imaginary. The social imaginary, however, is itself instituted and constantly re-instituted by those living within the imaginary institution of society through the exercise of radical imagination.

IIS frequently appeals to the radical imagination but offers few examples and virtually no explanation in detail of how it functions. A possible supplement in this respect might be drawn from two sources with which Castoriadis was familiar : Aristotle's account of sensation and imagination in *On the Soul*, and Ferdinand de Saussure's *Course in General Linguistics* (more specifically, his neglected ventures therein into the psychology of sign formation and use). Taken together, these sources allow for a more exacting and illuminating account of the foundational institution of signification in language, with consequences for encouraging

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social change through education that might awaken in students a sense for the richness of the signitive networks that support practices of enriched living and knowing.

***Keywords**: Castoriadis, Imagination, Language, Signs, Aristotle, Saussure, Kant, Freud*

Résumé :
Dans *L'Institution imaginaire de la société* (*IIS*), Cornelius Castoriadis a offert à la fin du vingtième siècle une explication puissante du rôle de l'imagination dans la création de la société et de toutes ses institutions particulières. S'appuyant en particulier sur le schématisme d'Emmanuel Kant et sur la dérivation par Sigmund Freud des symboles du désir conscient et inconscient, Castoriadis a montré que les mondes naturels et sociaux sont organisés par une logique de base, ensidique (des ensembles avec l'identité et non-contradiction), mais qu'ils n'atteignent une densité expérientielle adéquate pour vivre en communauté que par l'institution de pratiques comprises selon des réseaux de symboles qui constituent l'imaginaire social. L'imaginaire social, cependant, est lui-même institué et constamment réinstitué par ceux qui vivent au sein de l'institution imaginaire de la société à travers l'exercice de l'imagination radicale.

L'*IIS* fait souvent appel à l'imagination radicale, mais ne propose que peu d'exemples et pratiquement aucune explication détaillée de son fonctionnement. Un complément possible à cet égard pourrait être tiré de deux sources que Castoriadis connaissait bien : le récit d'Aristote sur la sensation et l'imagination dans *De l'âme*, et le *Cours de linguistique générale* de Ferdinand de Saussure (plus précisément, ses tentatives négligées de psychologie de la formation et de l'utilisation des signes). Prises ensemble, ces sources permettent de rendre compte avec plus de précision et de clarté de l'institution fondatrice de la signification dans le langage, ce qui a pour conséquence d'encourager le changement social par le biais d'une éducation qui éveille chez les étudiants le sens de la richesse des réseaux de signes qui soutiennent les pratiques d'une vie et d'une connaissance enrichies.

***Mots-cléfs:** Castoriadis, Imagination, Langage, Signes, Aristote, Saussure, Kant, Freud*

You taught me language, and my profit on't is I know how to curse.
Caliban, Shakespeare's *Tempest*, Act 1, Scene 2, ll. 437-8

I. Castoriadis and the Radical Imagination

Since the publication in 1975 of *L'Institution imaginaire de la société*, the work of Cornelius Castoriadis (1922-1997) has become ineludible for thinking seriously about imagination[1]. No other theorist of the second half of the twentieth century has offered a comparably detailed and powerful conception of the role of imagination in politics and social life. A major source of its power is being rooted in Castoriadis's understanding of the history of philosophy, psychological theory, and political and social thought.

For twenty-first century readers, this manifold rootedness can be easily obscured by the first quarter of the book, in which Castoriadis focuses on critiques of Marxism and, to a lesser extent, functionalist explanation in the social sciences. The former critique is hardly surprising, in view of his involvement with Marxist movements in Greece and then, after his flight in 1945 to escape persecution from the Greek regime, in France. By 1948 he and his French colleagues had left the Communist party to establish the movement known as Socialism or Barbarism. The argument presented in part 1 of *IIS* is in sum the critique of Communism he had been developing over almost three decades.

I shall forgo any attempt to elaborate Castoriadis's critique of Marx and his concomitant dissatisfaction with contemporary approaches in the social sciences. Nor will I go beyond mentioning his undergraduate studies in Greece of law, economics, and political science, his professional employment in France as an economist at the OECD, and his polymathic studies in Paris, especially of philosophy and mathematical logic, all of which circuitously and ultimately led to his becoming a psychoanalyst with the *Organisation psychanalytique de langue française*, the Freudian group that sought a "third way" between Lacanian psychoanalysis and the more traditional International Psychoanalytical Association. Suffice it to say that almost all his intellectual undertakings were guided by the intention to remain faithful to the revolutionary impulse that had been fundamental to the origins of Marxism and a striving for autonomy that he found to be rooted in the simultaneous emergence in ancient Greece of philosophy and democracy.

The turn to Freudian psychology provided a way out of the dead ends of both functionalist social sciences and contemporary Marxism. With functionalism, every social phenomenon and institution existed to serve a relatively specific, socially required function. This might hold some limited truth, but in the face of the bewildering, seemingly irrational variety of cultural practices uncovered by more than a century of anthropological field work, it had no more than schematic and often

[1] Castoriadis, 1975. The work will henceforth be designated "*IIS*" and cited according to the English translation (Castoriadis, 1987).

trivial explanatory power. Marxism adopted its own varieties of functionalism that aimed more at achieving ideological closure than genuine understanding (Castoriadis, 1987: 68-70, 115-7).

After two chapters of this critique, the third chapter of *IIS*, "The Institution and the Imaginary : A First Approach", turns to positive purposes. It begins by drawing theory into commensuration with social reality through the *symbol*, the ultimate support for which, Castoriadis argues, resides in the imaginary. Symbols, not singly but in interrelation, provide an inescapable and productive framework for actions. « Real acts, whether individual or collective ones — work, consumption, war, love, child-bearing — the innumerable material products without which no society could live even an instant, are not (not always, not directly) symbols. All of these, however, would be impossible outside of a symbolic network » (*ibid*. : 117). Human beings first and most richly encounter the symbolic in language, but also (and in many different ways) in institutions; and although « institutions cannot be reduced to the symbolic, … they can exist only in the symbolic » and are « impossible outside of a second-order symbolism; for each institution constitutes a particular symbolic network » (*ibid*.). That is to say : all individuated institutions are themselves first-order systems supportive and expressive of their own symbolism, and at the same time embedded in the more all-embracing, second-order symbolisms of the encompassing society. « These systems consist in relating symbols (signifiers) to signifieds (representations, orders, commands or inducements to do or not to do something, consequences for actions — significations in the loosest sense of the term) and in validating them as such, that is to say in making this relation more or less obligatory for the society or the group concerned » (*ibid*.).

Functionalism acts as though the signification should have clarity like that of mathematical symbols. But symbols are not fundamentally like that. They are already a form of human imagining, a social or collective form of imagining instituted in bodies, things, and practices sanctioned by use; contrariwise, images would be hardly more than a variety of delirium or hallucination if they were not attached to practices, stabilized, and shared through the processes of symbolization (*ibid*. : 127-8). It is the human capacity for imagining, both originally and in connection with previous imagining, that thus provides the key to human meaning through the original production and the constant reproduction of symbols. In this way Castoriadis introduces the real burden of the book : to understand the functions of imagination, from the radical imagining of the individual to the established social imaginary, and how they institute and embody society's symbolic significations and practices.

Castoriadis describes important distinctions of the imaginaries in a note:

> One might attempt to distinguish in the accepted terminology between what we term the ultimate or radical imaginary, that is the capacity to make arise as an image something which does not exist

> and has never existed, and the *products* of this imaginary, which could be designated as the *imagined*. The grammatical form of this term, however, might lead to confusion, and I prefer to speak instead of the actual imaginary. (*ibid*. : 388)

The ultimate or radical imaginary, which is the human capacity to make what is currently nonexistent nevertheless appear to mind, is the ultimate source of the previously imagined and instituted contents of the social imaginary proper. Once an image has entered, by virtue of radical imagining followed by social acceptance, into the realm of what has already been previously imagined, the future imagining of that image and its symbolism becomes largely a repetition and thus part of the social imaginary, so that one can no longer simply attribute it primarily to the radical imaginary. The social imaginary inevitably becomes conventionalized. Still, any actual imagining by a human being, no matter how conventional, requires a scintilla of open possibility and novel connections.

IIS makes clear that the chief historical inspiration for this unfolding of symbolism and imagination comes from Kant and Freud. The debt to the former is more immediately evident than the latter. Even a cursory glance at chapters 4 and 5 of *IIS*[2] shows Castoriadis quite deliberately expanding and deepening what Kant presents in the *Critique of Pure Reason* as functions of imagination in its transcendental use. For Kant, this means that, first, there is a positioning of sense appearances in the pure intuitions space and time, which underlie mathematics, physical reality, and historical eventality, and, second, there is an implementation of the pure concepts of understanding through transcendental schemata[3] that govern the basic logical / relational structure of what appears in the world of nature, i.e., of everything that appears to and is concretely imaged in sensibility's perceptions of things and events in space and time.

Kant's critical inquiry takes almost completely for granted the nature and correctness of *general logic*. The transcendental aesthetic and logic that are the focal concerns of the *Critique of Pure Reason* "merely" explicate how our experience of the space-time world of nature provides us with imageable terms and propositions that fit and fill the forms of general logic. The transformation of general logic in the

[2] The work is divided into two major parts, "Marxism and Revolutionary Theory" (three chapters) and "The Social Imaginary and the Institution" (four chapters). Chapter 4, the first chapter of part 2, thus follows immediately after chapter 3, the last chapter of part 1.

[3] A schema for Kant is a bidirectional relation between concept and image. The concept activates at least incipiently an image in the manifold of sensibility in accordance with the concept, and in turn an image or otherwise intuitable figuration of the manifold begins to activate the concept. The fundamental schemata implement the pure concepts of the understanding, but Kant also expressly considers schemata for numbers and for 'dog' in the early chapter of the First Critique's analytic of principles, "On the Schematism of the Pure Concepts of Understanding".

course of the later nineteenth and twentieth centuries into mathematicalized formal logic plus set theory (which Castoriadis calls *ensidic* logic, for 'ensemblistic-identitary') demanded a renewed examination of its foundations, however; this is part of the deeper motivation of Castoriadis's extension of Kantian schematism.

In Castoriadis the rules of schematism are no longer aimed solely at the conceptualization of experience that leads to mathematical and physical knowledge. Schematism is now more generally also about the foundation of symbolization. The society of socialized human beings acquires a thoroughgoingly symbolized manner of living in a communal world of nature-and-culture and of practices that involve manifold ways of both *legein* and *teukhein*, of appropriating things with meanings and of making and manipulating them with the most varied background purposes and placed in different signifying networks, both social and material. By the end of chapter 5, Castoriadis establishes a logico-technical apparatus for understanding and building a world not just for physics but for comprehensive habitation by human beings with all their diverse interests. In chapter 6 he proceeds to incorporate into the human imaginary the complications produced by conscious and unconscious desire and the psyche's translation of desire into symbols that suffuse imagination and the process of symbolization. (This is obviously where Freud comes fully into play.) The imaginary institution of the world thereby supports the constitution of a primal psychological subject and its further development into a social-historical being possessed of a social imaginary that shapes, and is shaped by, the human capacity for (further) radical imagining. Although it is not the case that every attentive glance at the world exhibits the creative innovation of radical imagination, with every such glance the individual human being begins to reactivate the already-acquired networks of signification; and every reactivation, because of the radical power of imagination, has to at least rediscover and reinstantiate past creations of meaning, with the ever-present possibility that something novel might emerge.

The goal of the concluding chapter 7 is to bring everything to a focus under the rubric *signification* — signification in language, in the social imaginary, and in the physical and social reality they superintend :

> to think of the world of social significations as the primary, inaugural, irreducible positing of the social-historical and of the social imaginary as it manifests itself in each case in a given society; a positing which is presentified and figured in and through the institution, as the institution of the world and of society itself. It is this institution of significations — always instrumented in the institutions of *legein* and *teukhein* — which, for each society, posits what is and what is not, what has worth and what does not, and *how* (in what way) the "is" or "is not" *has worth* or *does not have worth*, can *actually be* or *have worth*. This is what estab-

> lishes the conditions and the common orientations of the do-able and the representable, and in this holds together, in advance and by construction, so to speak, the indefinite and essentially *open* multitude of individuals, acts, objects, functions, institutions in the second-order and customary sense of the term, which multitude in each case, concretely, constitutes a society. (*ibid.* : 368-9, lightly emended for clarity)

Such is the goal of Castoriadis's grand theory of the elements and the archeological stratigraphy of imaginary signification.

It is perhaps odd, then, that we do not encounter in *IIS* any attempt to portray the social imaginary and radical imagination at work. This is not anything like a fatal objection, of course, since Castoriadis sketches the elements and the levels in detail sufficient to know how to look for them, through a kind of differential analysis, in imaginative results. But it is, I think, possible to do and see more, if we know where and how to look.

II. The Places of Proportionated Imagining in Aristotle

Castoriadis did not see himself in any simple sense as following in the footsteps of past thinkers, not even Kant and Freud. His own task was not to recover anyone else's doctrines but rather to use resources they (and others) provided to think things through for himself (*ibid.* : 174).

Yet sometimes a deeper dive into originating texts and historiography reveal not just nuggets that can be reworked for one's own purposes but different vectors of investigation that point to new aspects and connections hidden from a first or even second view, whether in their work or in one's own. Here I want to look to two thinkers, Aristotle and Ferdinand de Saussure, for whom Castoriadis had considerable esteem and who, read against the customary grain, allow important insights into the ontology and psychology of imagination's function in language[4].

Aristotle's writings do no more than touch on the relationship between language and images / imagination. One of the few immediately relevant passages occurs in *On the Soul*, II.8, where he distinguishes sound from voice, which is « a certain sound of an animate being » (*On the Soul*, II.8 : 420b6)[5]. He remarks that not every sound made by an animal is voice, only those in which the impact (required for

[4] The most extensive treatment in *IIS* of « the question of social imaginary significations in the widest and most familiar domain : that of signification in language », occurs in the second section, "Significations in Language", of concluding chapter 7. See Castoriadis, 1987 : 345-353.

[5] My quotations from *Peri psuchēs* (better known by the Latin name, *De anima*) are drawn, occasionally with light emendations, from Aristotle, 2001. For this and the rest of Aristotle's works, I shall henceforth cite the standard English title followed by [book and] chapter and Bekker page and line numbers in the form given, above.

sound) is « ensouled and done with some imagining » (*ibid.* : 420b31-32)[6]. If animal voice requires some imagining, one would expect the same to be true of the special human voicing of language. Aristotle's discussion of words and their use in the brief *On Interpretation* does not, however, even mention imagination. After asserting the symbolic semantics of the written with respect to the spoken and of the spoken with respect to the affections (*pathēmata*) of the soul, he refers us to another study — presumably *On the Soul* — for the ground of this assertion. It is left to the reader to parse what Aristotle means.

The *locus classicus* of Western philosophy's conception of imagination — and not just Western philosophy's — is book 3 of Aristotle's *On the Soul*, most especially chapter 3. It is this chapter of Aristotle that Castoriadis thinks is the foundation of almost all investigation into imagination; he calls it Aristotle's first discovery of imagination. It begins with the fact that predecessors had not sufficiently distinguished the powers and acts of sensation and thinking, and in particular had not distinguished the source of *false* sensing and thinking. It ends, after a long discussion of what imagination is not, with a conceptually "thin" definition of what it is. It scarcely prepares the reader for claims a few chapters thereafter, so striking to Castoriadis that he regarded them as Aristotle's *second* discovery of imagination : claims that images are elemental, omnipresent, and even constitutive in all thinking and human praxis[7].

The thin definition is given in a very long, complex, conditional sentence predicated on the already-established notion that sensation is a kind of motion (*kinēsis*). The nub of the definition is this : imagination (*phantasia*) « seems to be some kind of motion and not to occur without sense ». It occurs only in animals that have sense, and it must be about things that are sensible. « Since it is possible for a motion to come about as a result of the being-at-work [Joe Sachs's translation of *energeia*, usually 'actuality' in other translations] of sensation, and necessary for it to be similar to the sensation, then this motion would be neither possible without sensation nor present in beings that do not sense, and the one having it would both do and have done to it many things resulting from this motion, which could be either true or false» (*ibid.*, III.3 : 428b11-18).

A few observations can clarify. (1) Although distinguishing imagination from other psychological acts requires contrasting it with other (higher and lower) powers, the definition is given generically, so that it will hold true of all animals capable of

[6] The last word is the genitive singular of *phantasia*, which is of course Aristotle's term for the power of imagining, but which can also indicate the act of imagining. The appearance that is evoked in such actions is the *phantasma*, plural *phantasmata* : the phantasm or image.

[7] Castoriadis, 1997 : 213-45. Castoriadis says that the second discovery — that there is no thinking at all without phantasms / images — ought to have *exploded* Aristotelian ontology. Then came the epigones: « Less profound — or less courageous — interpreters and philosophers who succeeded him will try relentlessly and repeatedly to smother the scandal of the imagination » (*ibid.* : 245). This failure was not a one-off but a perennial syndrome congenital to Western philosophy whenever it turns to questions of imagination and the "threat" it poses to philosophical and scientific reason (*ibid.* : 213-6).

imagining. (2) As (Aristotelian) *motion*, imagination needs to be specified both with respect to its source and its destination. The definition mentions only the source, the *energeia* (actuality, being-at-work) of *aisthēsis* (sensation). The destination, or destinations, cannot be specified without knowing more about the specific animal in question and other powers it has. Generically Aristotle says that animals do many things and have many things done to them according to this *phantasia*-motion. Later, in *On the Soul*, III.11, he distinguishes the sensory imagination of nonrational animals from the calculative and deliberative imagination of the rational animal. (3) Although Aristotle states that « most imaginings turn out to be false » (*ibid.* : 428a12-13), this is misleading when taken without qualification. Properly speaking, truth or falsity is in question only insofar as the appearance in imagining is accompanied or followed by *hupolēpsis*[8] (in terms of the psychological acts discussed in III.3) or by the composition of intelligibles in phantasms (as at *ibid.*, III.6 : 430b2-7)[9]. That imagination can be either true or false is especially important to keep in mind whenever an animal, human or not, is in process of imagining with respect to prospective behavior. In the sense that any imagined future activity does not (yet) exist, the imagining is false, but that is trivial — or rather is a category mistake, since the imagining per se is not an assertion that a state of affairs exists. (4) Although nothing about chapter 3's definition prepares us for the stark assertion in chapter 7 that there is no thinking without phantasms, it is foreshadowed by chapter 3's assertion that there is no *hupolēpsis* without imagination (*ibid*., III.7 : 427b15-16). Without an appearance that has originated (however remotely) in sensation, there is no being struck by appearances, no having it begin to appear that something they present is the case. (5) Because imagination, like sensation, is a motion, imagining must have a certain beginning-and-end structure as a consequence of Aristotle's general theory of motion. Moreover, because it is a motion that originates in sensation, and sensation is diverse — to begin with, there are proper, common, and incidental sensibles, and each of the five kinds of proper sensation (vision, hearing, touch, smell, taste) perceives multiple sensibles (e.g., white, black, red, green, shiny, matte, etc., in the case of sight) — even in nonrational animals there can be manifold kinds of complex images and imagining in the field of color perception.

Let us further complicate point 5. Aristotelian motion in general involves con-

[8] In this passage *hupolēpsis* is the genus of *episteme*, *doxa*, and *phronesis*. It is usually translated "belief", sometimes "judgment", but the former is too generic and the latter too perfective (in the sense of something completed) to capture the *incipient* aspect implied by the Greek word. *Hupolēpsis* occurs when the imagined thing begins to strike us as having a certain character, a striking that precedes any propositionalization, much less an attitude (like belief) toward any resulting proposition. It is the beginning or incipience, not the completion, of making sense of what the image is showing. Perhaps one could call it a first impression, as long as one remembers that it is preceded by the impression of the image.

[9] The medium for such composition, for human beings, is typically predication. A foraging insect with color vision might well be able to discriminate a green tomato from a red one, but to say that a tomato is red or green requires apprehending red and green as colors and a tomato as a material substrate for colors.

traries (*enantia*) in a field-substrate (*hupokeimenon*)[10]. Although local motion, *phora*, is distinct from the other two kinds of *kinēsis*, qualitative change (*alloiōsis*) and increase-and-decrease, Aristotle claims that the latter two both are also accompanied by local motion[11]. In the case of the activity of sensation that is the origin of *phantasia*-motion, there is a strong *prima facie* reason to emphasize the involvement of local motion : in animals having common sensation, the activity of the external sense organs must be somehow physically conveyed to the place in the body (presumably near the heart, according to Aristotle, although the interpreters of Aristotle soon relocated it to the head) where they are joined in common sensation[12]. Again, if there is a motion that commences with the activity of common sensation that is carried to other parts of the body (to the memory, or to the muscles to execute the animal's purposeful locomotion in response to sensation), these motions would be *phantasia*-like if not *phantasia* proper — to be *phantasia* proper they have to (eventually) produce an awareness of something like the original appearance.

But even more important for the structuring of both sensing and imagining is that sensation is a kind of proportion between the contraries or extremes (*enantia*) in the substrate (*hupokeimenon*)[13]. A change in a perceived quality involves a change of some ratio of participation or mixing with respect to extremes in the substrate. Although in the first instance the Book II discussions in *On the Soul* of the external senses appear to identify a single set of contraries for each sense, it turns out that there are many for each[14]. When we add to these considerations (regarding each sense individually) the common sensibles (e.g., unity, place, and time) that appear in common sensation, and consider further that their becoming conjoined makes it possible for overall sensation to distinguish the various proper sensibles more distinctly[15], we begin to approximate more closely how an actual impression of sensation strikes us (a *phantasma*-appearance with *hupolēpsis*).

Even at the level of nonrational animals, this coimplication and codistinction of sensibles according to the more and less between various sensory contraries could produce highly articulated sensory images that lead to different purposeful behaviors corresponding to an animal's situation. With human beings' rationality, however, we would need to add all the sensibles that Aristotle calls *accidental* or *concomitant* (these are synonymous English renderings of *sumbebēkos*; see *On the Soul*, II.6 :

[10] See *Physics*, I.1 : 189a11-191a22.

[11] See *Physics*, VIII.7 : 260a26-261a26, and *On the Motion of Animals*, 5 : 700a27-700b3, and 7 : 701a2-32,

[12] See *On the Parts of Animals*, II.7 : 652b4-7 and 17-27, and II.10 : 656a14-656b7.

[13] See especially *On the Soul*, III.2 : 426a28-426b15. The *hupokeimenon* of a sensible difference need not be substance per se : for example, the *hupokeimenon* of color is in the first instance bodily *surface*.

[14] See *On the Soul*, II.11 : 422b17-33, and II.12 :, 424a25-33. Today, besides light and dark, we would identify many other contraries in (color) vision : for example, saturated-unsaturated, matte-glossy, blue-yellow, and red-green (most of which would, as with Aristotle, be understood to have some physiological basis).

[15] *On the Soul*, III.1 : 425b5-11.

418a21-24). When we glimpse a white-clad figure just coming around a corner and say "That's the son of Diares", we have sensed Diares himself *accidentally, concomitantly*. This seems to be the phenomenon in virtue of which we apply names and words to the typical look of a thing, and because of the naming and predication involved this would be impossible without reason. If it makes sense to say that there is imagination corresponding to proper and common sensation, it should also make sense, although with a more complex reckoning of its activity and motion, to say that there is accidental / concomitant imagination[16]. When I imagine or conceive Diares in a white tunic, I am engaging in concomitant imagining, which opens up to the manifold distinctions made possible through language.

If it is true that in Aristotle's conception of sensation as activity and motion it is important to locate any sense quality as a ratio between extremes in an appropriately distinguished substrate or field, then something similar would hold for the motion that is imagination. An image or phantasm is never a simple given; it is rather the product of a complex (re)determination, (re)production, and new positioning of the substrate's *phantasia*-motions that reevoke the appearance against a relevant background. A corollary would be this : if to have a phantasm is to activate a substrate in a proportion between extremes, there is no reason to think (with, say, Hobbes, Locke, and Hume) that one can imagine only those appearances one has experienced before, recalled exactly as one experienced them before. Once a field of imagining is activated, it should be able to move toward ratios one has never actually encountered previously. Imagination as a motion derived from sensation is in essence abstractive, whereas as reevocation it is newly concretive. With respect to a real thing, or a simulacrum of a real thing, one can reevoke as many sensory fields potentially involved and their variant possibilities as one wants or needs; thus a concretive, imaginative reevocation is necessarily also abstractive in comparison with the original, since one mentally removes it from its original situation.

An irrational animal can have nuanced behavior with respect to images because images and their features bear specific information by being situated between contraries in a sensory field. The same is true of a rational animal, but this kind of animal has the surplus of noting, marking, recombining, and newly positioning the possibilities in conscious and self-conscious ways, in view not merely of action with respect to a specific desire or behavior but with respect to background contexts of all types : the good and the bad in the forms of the pleasant and the painful or the desirable and the noxious; the good and the bad in the forms of the true and the false per se; and the true and the false in both the unqualified sense and in the myriad ways that the true and the false can appear (as I shall consider in the next paragraph) as qualified[17].

[16] This corresponds more or less to the medieval faculty called *vis cogitativa* in human beings (the corresponding noncogitative power in animals is called *vis aestimativa*), which Thomas Aquinas also called *ratio particularis*, particular reason.

[17] I am adverting here to the terms of Aristotle's discussion in *On the Soul*, III.7.

This reinforces a sense in which imagination is phenomenologically as well as physically a movement : an image-appearance is almost never an end in itself, it serves as a way-station. It is a way-station that depends on the typical, but also the contingent, workings of the sensitive and cognitive capacities and on characteristics and possibilities of things of the world that the human being has experienced. Most of those experiences are shared or shareable with others by virtue of the physical and physiological character of sensation and imagining, though some are dependent on the vagaries of individual experience and on what Castoriadis calls radical imagination.

I will conclude this speculative reflection on Aristotle's imagination with the merest of indications of what it means to extend this line of inquiry. In *On the Soul*, III.7 (431b2-3), Aristotle says that the thinking part of the soul « thinks the forms in the images ». He cites a few examples : at night, from the citadel of the city, we see a light (that is, by *proper*-sensing); as the light moves (recognized by *common*-sensing) we identify the appearance as enemy troops on the move (this is *concomitant*-sensing); and then (in a process he calls *deliberative* imagining in III.11), the military commander can make a rational plan for marshaling troops. Aristotle for similar reasons brings up the phenomenon of a snub nose. We can conceive it merely according to its curvature (abstraction or *aphairesis* proper) — this would happen in imagining it mathematically; alternatively, we can imagine / conceive it as flesh with concavity (as a plastic surgeon might). In *On Memory and Recollection*[18] Aristotle brings up the various ways in which we can take the same geometric figure with respect to other geometrical entities and to the figure's instantiation in different matter in different situations. Such passages, in combination with the many ways in which the various proper and common sensibles can be distinguished from one another (explained in *On the Soul* III.1 and 2) and the ways in which the indivisible can be taken in III.6 — not to mention the perplexing moment at the end of III.8 where Aristotle regards as a possibility that the ultimate intelligible things might themselves be phantasms[19] — give us more than enough to see how and why there is for Arisotle no thinking without phantasms and how far, as Castoriadis insists, that dictum extends: as far even as questioning basic *topoi* of Aristotelian ontology of knowing. Imagination is, in effect, what reason does to, about, and with respect to phantasms. There is no thinking without the mobility of *determinable, designatable, mobile, field-located appearances* — not even when thought thinks the ultimate intelligibles. And the intelligibility of forms in images is not absolute, since intelligibility is a reading of phantasms placed against highly variable and optionally selected backgrounds.

Castoriadis was doubtless wrong to think that a chasm separated Aristotle's first discovery of imagination from the second. Aristotle's thinking about mind and the

[18] *On Memory and Recollection* 1 : 450a1-14.

[19] *On the Soul*, III.8 : 432a4-13. In the same breath he discounts the possibility, but his response is a rhetorical *question* rather than an *explanation*, and he immediately reemphasizes that ultimate intelligibles cannot exist without phantasms.

motions of mind carved out *places* for signs and names that might have been used by subsequent thinkers to map the mobility of intellect with respect to phantasms. « No thinking without phantasms » was at least foreshadowed in what the first discovery laid down about imagination with respect to the genus *animalia*. Unfortunately, Aristotle himself said hardly anything about these places, much less explained how imagination and reason move in them. Is there a contemporary, and not just antiquarian, way in which we might begin to do this on his behalf, in accordance with the conceptual topology of imagining he laid down — and in a manner that could strengthen and extend Castoriadis's project?

III. Saussure : Language as the Fundamental Interface of Mobile Psychological Fields

Ferdinand de Saussure's putative masterwork, *Cours de linguistique générale*, (*Course in General Linguistics*) — henceforth *Cours* — was cut-and-pasted together and published in 1916 by colleagues and students from notes that had been taken in three different offerings of the course at the University of Geneva between 1907 and 1911. The 1996 discovery of manuscript notes in the Orangerie of the Saussure house in Geneva has produced a deepened conception, even a reconception of major themes in his general linguistics[20]. In particular, Patrice Maniglier has published a rereading that turns Saussure into a real philosopher of language and an ontologist of signs[21]. My aim here is much more limited : drawing on Maniglier, I will elaborate, with the Aristotelian framework we have sketched in mind, the *field positioning and mobility* of the sign and its character as a *complex image* situated in or against a variety of specific (back)grounds.

Signs and their structure are evidenced only in acts of speaking, *paroles*, but those acts of speaking are made possible by and conform to the socially-inculcated sign-system, *langue*, into which children are born and which they acquire from those around them[22]. Signs are a psychological phenomenon, but they are a phenomenon

[20] The Orangerie manuscripts constitute about a third of Saussure, 2002 [2006]. The rest of the volume is drawn mostly from Saussure's notes published in Engler's critical edition of the *Cours*, which prints, in six columns, the posthumously published pastiche alongside the contents of student notebooks plus assorted notes from Saussure himself; see Saussure, 1967.

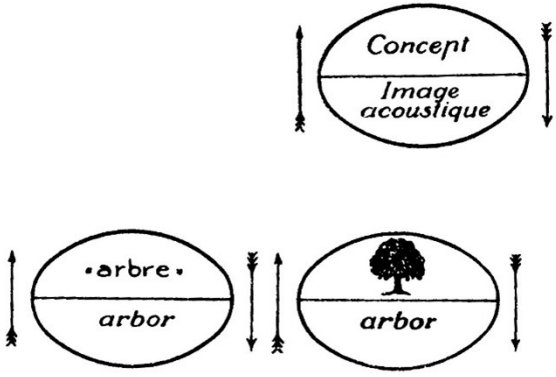
[21] Maniglier, 2006. Some scholars have even proposed that it might be time to abandon the pretense that the *Cours* represents the thinking of Ferdinand de Saussure; see, for instance, Stawarska, 2015.

[22] In any attempt to render the distinctions of *langage*, *langue*, and *parole* in English or any other language, it is important to keep in mind that they bear to one another Aristotle's distinction (explained in *On the Soul*, II.1) between potentiality, first actuality (*protē entelecheia*), and second actuality — a distinction Aristotle in fact introduced using the example of "being grammatical". (To my knowledge Saussure never pointed out this connection.) *Langage* typically is used of the basic linguistic capacity of human beings and of languages in general as realizations of that capacity; *langue* refers to the sum total of words and structures in a specific natural language that are instantiated in every possible particular act of speaking; and *parole* refers to all the specific acts of speaking governed by *langue*. An infant is capable of acquiring a *langue*, so therefore "has" *langage* (pure potentiality); once it has begun speaking and understanding, it to some degree possesses *langue* (first actuality); when it is actually speaking and listening, here and now,

of social psychology before appearing in individual psychology[23]. They are thus intersubjective. The sounds that are produced in speech can be studied by the methods of the physicist, but physics as such knows only sounds as vibrations of a medium, not phonemes. The linguistic scientist knows phonemes expressly, but only by virtue of being, like all others in a language community, a speaker who uses phonemes.

The sign is a fusion of concept and acoustic image. Saussure's typical figuration of it (Fig. 1, from Saussure, 1922 : 99) uses an oval bisected by a horizontal line, with the conceptual aspect indicated above, the acoustic image below. The up and down arrows indicate that, analogously with Kant's schematism, one can go as easily from signification to signifier / image as vice versa. Several possible misconceptions need to be set aside immediately. By "concept" Saussure does not necessarily mean some high-level intellectual abstraction; it can be virtually any contents of consciousness[24]. This is why Saussure can unembarrassedly fill the upper part of the oval now with the word "concept", now with "signified" or "signification", now with a word in quotation marks (for example "arbre", standing for the signified of a specific sign that is fused with the sound of the Latin word "arbor"), now a silhouette or picture of a tree.

Figure 1



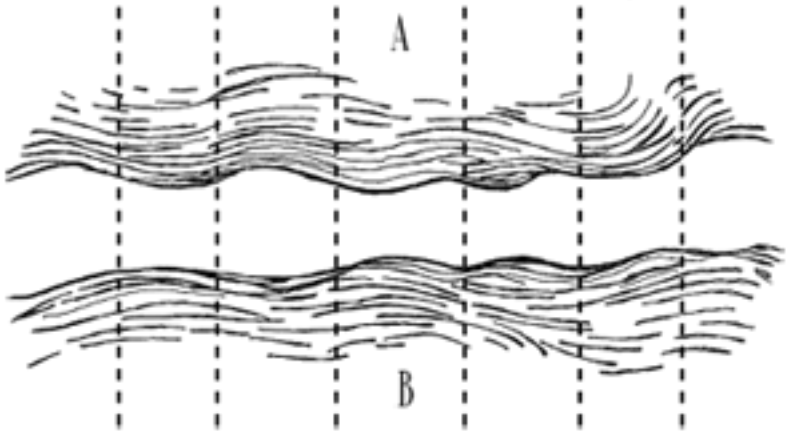
it is engaged in *parole* (second actuality). *Langue* is a first actuality that is social in nature but embodied in each individual psyche, where it generates second-actual language (in the sense of actively speaking and listening) at work.

[23] At the very outset of the *Cours* Saussure presented language as the *prototypical* system of signs and designated the science of signs and their use *semiology*. Semiology is a branch of *social psychology*, and social psychology of *general psychology*. See Saussure, 1922 : 33. This is the second edition (with slight emendations of the original 1916 text, also published by Payot), which has become the standard for French citation. For a widely available English version, see Eng. trans. Harris, 1986 : 15. Harris's translation includes marginal references to the French pagination.

[24] See Saussure 1922 : 28, where "concept" is introduced for "facts of consciousness".

What is the ontology of the sign and its formation? Saussure explains using a figure (Fig. 2, from *ibid.* : 156*)* that the *Cours* presents at the outset of the crucial chapter "Linguistic Value". A mass of squiggles and dashed lines presents a stormy sea (designated B) beneath clouds driven by wind (designated A). Waves are formed on the ocean surface by wind (due primarily to atmospheric air pressure changes). In the first instance there are two systems present, two fields, that of the air and that of the water. When the two interact — when the wind moves over the waters — we get waves, a form or structure that belongs to neither the one nor the other but to the field or plane of their interface. In an analogous way the mind / spirit moves through the sea of sound and the sea of presentative ideas, and at the interface is formed all the structural complexities of the language system, the fused signifieds / signifiers produced not just singly but *en masse*[25].

Figure 2



This is a moment of near-poetry in the *Cours*[26]. It is a symbol of the total relationship between « the plane of vague, amorphous thought » and « the equally featureless plane of sound » (*ibid*.). The first point to make, then, is that before their encounter there is vague, amorphous psychic content and sound, but neither is fully or distinctly articulated; one cannot identify distinct ideas or definite, phonemic sounds in advance. Their form, or rather their formation, comes precisely in the encounter of the realms of ideation and of sound. The second point is more subtle and corrects an imprecision in the first point. It looks initially as though Figure 2 represents an

[25] « What happens is neither a transformation of thoughts into matter, nor a transformation of sounds into ideas. What takes place is a somewhat mysterious process by which "thought-sound" evolves divisions, and a language takes shape with its linguistic units in between those two amorphous masses » (*ibid*., : 156).

[26] It is all the more evocative in that it alludes to the first *Genesis* account of creation.

interaction of the psyche with the physical realm of acoustics. But on this issue Saussure is resolute : both mediums, that of sound and that of meaning, are psychological, they are both image-appearances, already in mind. The sound that the analogy is concerned with is what can be apprehended by the socially formatted hearing of members of a language community. The sea represents all sounds in general, which are thus "mere" facts of audial consciousness; the air in turn stands for all the facts of (blooming and buzzing) presentative consciousness other than the aforementioned sounds. Both meaning-presentation and sound-hearing take place in fields in process of articulation; out of the encounter of the fields arises an interface-field that is neither concept nor sound but their dually articulated fusion. This fusion is the uniquely social-psychological dynamic of language, which is the most typically human form of *incipient imaginative appearance*[27].

What starts out as two different, amorphous fields issues in a fused interface, the articulated field of signs. And this process of articulation is not once and for all entirely complete, because every time the linguistically competent person speaks, that person engages anew in the process of sound-and-meaning differentiations. Fixity in this process is only ever a relative matter; no two speakers pronounce all their phonemes in exactly the same way, each individual pronounces each phoneme differently according to circumstances, and meaning always varies according to education, intention and context. That is characteristic of semiology, wherein nothing is fully positive and preestablished once and for all[28].

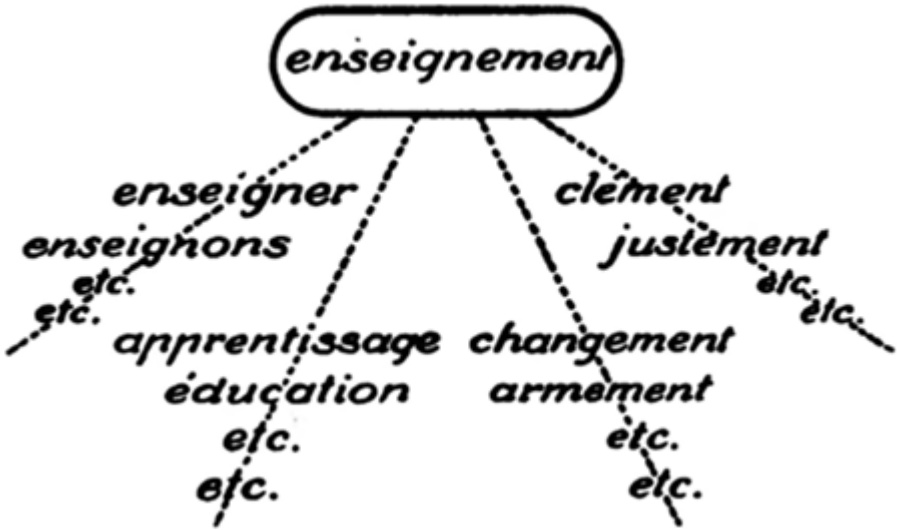
Every time "walk" is heard (by listeners) or intended (by speakers) there is a potentiation of conjugations and declensions, synonyms and antonyms, suffixes (-ing, -ed, -er, -like), verb-compounding auxiliaries and particles (as in "shall walk", "would walk", "walk up to", "walk down", "walk along", etc.), assonances, rhymes, and so on and so forth. This is all part of a network of signifier modulations that allow for a finely nuanced thinking and speaking about things because they are simultaneously signified modulations. The potentiated dynamism of language is not, of course, exhausted at the level of the individual sign and its grammar, not least because, as Saussure insistently affirms, signs as such exist only in networked combination. In the section "Linguistic Values" he produces a figure in which all the ovals with their dual-arrow potentiation are placed in series, with a double-arrow between adjoining signs (*ibid.* : 159*).* Our understanding of this representation of phrases and sentences has to be amplified further by a figure he introduces in the succeeding chapters to represent virtual relationships. He places a word of interest in a circle or a box and

[27] To return to Kant, this may be a moment of insight into the « blind but indispensable function of the soul without which we should have no knowledge whatever but of which we are scarcely even conscious » : imagination in its transcendental function.

[28] Castoriadis's distinction between the radical imaginary and the social imaginary is, in the last analysis, perhaps too positivistic about socially constituted images. It is precisely their inevitable fluidity, even as social institutions, that allows for the freedom of each individual to recognize and utter meaning-with-differentiation in the moment.

then extends dotted lines leading away from the word, with other words arrayed along those lines as variants on the circled word according to possible signifying or signified features (Fig. 3, from *ibid.* : 175*).*

Figure 3



Each word along the dotted lines is not placed according to an absolute necessity of appearing precisely there. These are potentialities rather than actualities; they are proper to the language (*langue*), but they are specifically instantiated in different ways in the social-psychologized mind of each speaker. None of the potentialities pictured in the array is assumed to be fully conscious or even at the threshold of consciousness, and their "closeness" would vary not just from person to person but also according to circumstance. Each word can thus be activated against indefinitely many such backgrounds taken to be relevant at the moment, for whatever reason. In the process of speaking, the person is constantly, almost continuously engaged in settling on terms by discrimination along such "lines"; the process sometimes breaks through to consciousness (e.g., when we are about to speak a word but pause because we know that we know a word that would be better) but is typically at a preconscious or even unconscious level. This, I believe, is the characteristic Saussurean inflection of radical imagination.

Each word-sign thus is a sound-meaning fusion subject to innumerable variations and combinations according to directions or vectors of differentiation (analogous to Aristotle's manifold differentiation of phantasms by way of changing backgrounds and concerns). Once "conjugating" or "synonymizing" or "rhyming" or "noun-forming" or "adverb forming" or "alliterating" is an activated interest, the

relevant network / field of potentiation will be at work in the social-psychologized mind. These are associations, but unlike seventeenth- and eighteenth-century empiricist associations they are not *just and simply* contingent and uniquely individual experience. They are developments of generations of the accumulated diachronic, differentiated experience of a historical community of speakers.

IV. Castoriadis after Aristotle and Saussure : Imagining's Politics of Words

That language is conventional and the first political / social institution is a thesis nearly as old as formal inquiry into language. Aristotle is one of the earliest sources for this claim : for the primacy of convention, in the first chapter of *On Interpretation*; and, for language's priority in the political, in book one of the *Politics*[29]. In the former, he says that although the things of the world and the affections (*pathēmata* — notice there is no reference to *phantasia* or *phantasmata*) that they produce in the human soul are the same for all, the sound signs that indicate them, as well as the written marks that indicate the sound signs, are different. In the latter, he says that voice (which *On the Soul* says is sound produced by organs touched with imaginings [*phantasiai*]) allows animals to communicate feelings of pain and pleasure to each other, whereas human beings « alone have sensation [*aisthēsin*] of good and evil, just and unjust, and so forth » — sensation of proportionable contraries in various substrates. *Logos* accordingly enables them to indicate the useful / harmful and the just / unjust, and it is the association of human beings who possess this common sensibility that makes a *polis*. Affections of the soul, signs, symbols, likenesses, *phantasiai* joined with vocalizations, a common sensibility for contraries that constitute a field of possible experience for the community : these are the elements of Aristotle's conception of the relationship between imagination, reason, and speech. As I have argued in the second section of this essay, the background that Aristotle indicates in *On the Soul*, concerning the principles that govern the relationship between things and their likenesses in the soul, directs us to the appearances and motions that, in the soul, originate in sensation and move deeper into the body and the body's activity[30]; the qualitative changes accompanied by physical movement he understands to be *phantasiai* or *phantasmata*. Furthermore, the physics of *kinēsis* and qualitative change requires conceiving the forms of sensation (whether sensed or imagined) as complexly structured by the contrarieties of the various sensibles, of the qualities originally perceived by sense. When Aristotle remarks that the noetic capability thinks the forms in the phantasms (*On the Soul*, III.7 : 431b2), we must avoid taking his words too casually. That is, we must not ignore the manifold underlying and nameable structures of sensible forms (these are *logoi*-structures) and the network of (possible) motions and positions between contraries that they imply and that reason

[29] *On Interpretation* 1 : 16a3-9, and *Politics* I.2 : 1253a7-18.

[30] Recall that what soul is for Aristotle is precisely the first actuality / activity of the body; see *On the Soul*, II.1 : 412a20-2 in particular.

is capable of noting and marking. Quite apart from any historical, hermeneutic work this entails for us more than two millennia after Aristotle, any genuinely Aristotelian interpretation needs to fill in the texture and detail that Aristotle himself omitted but nevertheless suggested and that is required for understanding these psychological phenomena.

If the ground of Aristotle's understanding is the natural psychology of each human being, shared by members of the species, for Saussure it is social psychology, which is hardly more than implicit in Aristotle. Moreover, the relationship between sound and soul *pathēmata* follows upon the likeness relationship of *pathēmata* to real-world things in Aristotle, whereas the natural affecting of the soul by things appears at first glance to be missing from Saussure. But we must not forget the wind over the water, the incipient structuring of the sense- and thought-affected mind that is in process of apprehending distinctly what would otherwise be a blooming, buzzing confusion and speaking accordingly. This is the Saussurean complication of *On Interpretation*'s process whereby thing in the world causes an affection in the soul (the same for everyone), and the latter leads to a sound and then the sound to a written sign that is different for different peoples with different languages. In Aristotle there is, however, a surrogate for Saussure's social psychology : education in the *polis*. Saussure in his turn can argue that the politics of language is more complicated than Aristotle presents. The dynamic process between the flux of sounds and the flux of meanings (as in Fig. 2) that fixes, at least for the present moment, the formation and fusion of signifiers with psychic content is a dynamic analogue to Aristotle's connection of affections of the soul (*pathēmata*) with word-sounds that designate them. This dynamism implies that the social imaginary (as we may now call it) is not a rigid automatism but is a process always at work in seeing, speaking, hearing, and designating. The exact character, import, and signification of what presents itself in first-approximation to the mind undergoes the shaping process of the social imaginary – applied by the potentially radical imagination of each person – so that the commonality of the total soul-appearance can be more or less the same, thus understandable, for all speakers of the same language community.

I have already suggested in this essay that joining the horizons of a psychologically-embedded conception of language in Aristotle with the social psychology of Saussure's linguistics might allow for understanding language specifically as a constitution of and opening to a manifoldly differentiable world. Whether these readings of Aristotle and Saussure in light of one another will satisfy Aristotle or Saussure scholars is hardly the point. That they provide us with conceptual resources and fruitful directions for our own thinking is what counts, especially in light of a Castoriadian concern for better understanding how the radical imagination works.

If Castoriadis had read the first discovery of imagination, in *On the Soul*, II.3, expressly against the background of Aristotle's physics of motion, he might easily have recognized that the gap between the two discoveries could be easily reduced.

The flexibility of imagination as a motion in domains (*hupokeimena*) with contrastive / contrary features (*enantia*) might easily have appeared to him as at odds with the subsequent Western conventional reading of the power as a slavish reproduction of an already experienced sensation. That in turn could have countered the traditional assumption that intellect simply reads in each image an invariant essence somehow imperfectly borne in it. If anything, it was the subsequent, increasingly rationalizing reading of Aristotle in later, Platonizing antiquity and in the Islamic and Latin Middle Ages, and the imposition on him of an inauthentic theory of abstraction, that led to this result.

Showing all that would require a very long book, of course.[31] But we have already indicated the presence of clues in *On the Soul*. Aristotle never says, neither in that work nor elsewhere, that all thinking is based on the abstraction of essences from phantasms. Such a notion platonizes Aristotle nicely but does nothing to express the burden of the key sentence in book 3, chapter 7 of *On the Soul* (431b2-3) : « for the thinking power knows the forms that are in the phantasms »[32]. An essence is a kind of form, to be sure, but form is myriad, and that is precisely what the "second discovery" of imagination explores. The light in the distance at night does not lead to grasping the essence of light or fire, but rather as many forms of being as are relevant to the context and the question being posed (it is a torch; it is a person walking in the night; it is a scout leading an invading army; it is Odysseus returning home; etc., etc., etc.). To think just in terms of the invariable essence of fire is to be ideologically blinded rather than genuinely enlightened.

Castoriadis cites as the culminating expression of the rationalist attitude the formula that « to be means to be determined » (Castoriadis, 1987 : 176). If that formula were rigidly true, then there could be no such things as change, individuation, innovation, freedom, or revolution. "To be is to be determinable", on the other hand, is compatible with the Aristotle who understood nature as what changes, what has potential, what has actuality incorporating the readiness for change.

Castoriadis's discussion of signification in language, in the last chapter of *IIS*, shows that he understands being as many-layered and signification as being intricately networked within and between layers of being. Without having any explicit concern for the ontology of nature and epistemologically-oriented psychology, Saussure arrived more than sixty years earlier at a conception of the dynamics of multiply differentiated fields in the networking of sign formation, a dynamics that did not just produce the fused signifier / signifieds of semiology but also the constant signitive in-formation of attentive consciousness.

Castoriadis was highly critical of structuralism, but when he cites Saussure he is inclined to acquit him of the later abuses introduced in his name (as at *ibid.* : 216). Castoriadis's writings in effect began to bridge any apparent gap between Saussure

[31] See Sepper, 2013.

[32] τὰ μὲν οὖν εἴδη τὸ νοητικὸν ἐν τοῖς φαντάσμασι νοεῖ.

and himself. The radical imagination to which each human being has access is the anthropological basis for understanding the "reality" of possibility and creativity that the metaphysical slogan "to be is to be determined" denies. To think the ontology of this possibility and creativity, it is useful to look through the lens of the dynamic indeterminacy of Saussurean meaning by differentiation. One of the fundamental errors of the structuralist adaptations of Saussure was to dichotomize *langue* and *parole*. At the previously cited *IIS* 216, Castoriadis recognizes this specifically as an important betrayal of Saussure's legitimate insights. The two (*langue* and *parole* — if it even makes sense to count to two in such matters!) subsist in a constant dialectic that is rehearsed in every speaker's mind at every moment of listening and speaking. A very simple corollary is that, at every such moment, the language-possessor is engaged in the differentiating meaning-seeking of linguistic competency. At every such moment, unanticipated and possibly creative openings upon the world are potentiated, not least by way of the networking that is anticipated in our Figure 3 (which has multiple, networked "roots" descending indefinitely far from the apex term of interest). Once a speaker offers to auditors a repositioning in the networks, they most often will reject the innovation as a failure or at best an attempted *bon mot*; but occasionally it will strike them as right, and thus the radical imagination will have begun to send out rhizomes of a new symbolic relationship in the social world. The network of roots never has the reality character — the positivity — of a drop of water or a molecule of H_2O, but it will have effective, labile determining force in the social imaginary of the community.

In this essay we have followed a Castoriadian path from Kant, very briefly Freud, to Aristotle and then to Saussure. What are the consequences? There are many, but here at the end I want to describe just one, an essentially social and political one.

In the first instance this consequence is one for an audience of philosophers, or at least para-philosophers. There is something positive to be gained from an explicit understanding of language as the imaginative and creative first actuality of a locally, and densely, embodied world. Those who believe that language can be understood in the first instance, or even the second or third, as bringing us into contact, direct and face to face, with ideal or real being are trapped by an illusion of easy universality. Those who believe they are living rationally or universally by virtue of logic and a scientific worldview are as much romantics as those who surrender to one or another provincialism that seems to soothe deep needs of the soul but often turns out to be philosophical *and* historical barbarism.

It is not a very deep truth to claim that, in the long run, you will not *achieve* anything more than you *say*, but it is a basic truth, and one that we ignore at civilizational peril. If you take education to be the transfer of information and skills, it will soon become little more than that. Instead of making language everywhere-denser in the field of experience, that take actually makes it more attenuated, isolated, and abstracted. Language will still, in its essence, be imaginative, but imagination can

be made sketchy and poor and merely provincial — perhaps better at uttering curses than casting light onto the world. If you describe and bespeak your environment in impoverished ways, the best that you can hope for is a correspondingly impoverished image of it. It takes an appropriately responsive and articulated culture to make imagination and linguistic imagination rich. The task of education should be to bring to first actuality for the public essential and already developed fields and field possibilities of human experience. And in order to have a first actuality, there has to first be a second actuality, an actual uttering of an illuminating and articulate word in the world. This is a basic lesson in Aristotle, and in Castoriadis, too.

Given the state of the political world and the contraction of higher education to forms of the technical and the financial-commercial, or even the governmental-ideological, it may seem too little, too late to talk of a pedagogical mission that is implicit in the radical imagination of language. But if we commence, at an elemental level in the everyday world, to speak more freely, carefully, and responsively about things of all kinds with those we encounter — especially the young — and if we cultivate in schools and other institutions an appreciation (and one might hope, eventually, a love) of wit and creativity, of poetry and lucid prose, and of the artist's capacity for modeling material realities and relations, past and present, then we might gradually become more accustomed to describing our world in ampler and more productive ways and thus, through the ordinary magic of language, evoke ever more possibilities by what we utter. And that would be a revolution of the *demos* very much worth having.

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DO YOU HAVE FAITH IN PSYCHOANALYSIS? Imagination as the key ingredient for the effectiveness of psychotherapy

David Antolínez

Abstract:
According to Isabelle Stengers, modern medicine has expelled hypnosis and suggestion in order to achieve scientificity. However, imagination is always present in treatments – especially those related to mental health – so it might be worthwhile to explain this phenomenon instead of reducing it or ruling it out. In this article, we shall explore how classic psychoanalysis has remained within this rationale and some alternatives to be found in contemporary authors. This requires a profound revision of the notions of factuality and fictionality that have determined the development of psychoanalysis, a discipline oscillating between scientific aspirations and literary sensitivities. Guided by the emphasis in ontology given by philosophers such as Michel Serres, Bruno Latour and Donna Haraway, we will provide a constructivist and prospective account of psychotherapy as a process in which imagination is not bounded to the individual mind but rather as a refined collective practice that enables the patient to embrace her becoming. Thus, imagination can be reintroduced as the chief cornerstone for the parallel healing of the patient's illness and psychoanalysis' epistemological paradoxes.

Keywords: figurability; imagination; psychoanalysis; scientism.

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Resumen

Según Isabelle Stengers, la medicina moderna ha exiliado la hipnosis y la sugestión de su praxis en aras del estatus de cientificidad. Sin embargo, la imaginación siempre está presente en los tratamientos – especialmente aquellos en salud mental – así que convendría tratar de explicar este fenómeno en vez de descartarlo de entrada. En este artículo, se explorará cómo el psicoanálisis clásico ha mantenido esta racionalidad cientificista y se examinarán algunas alternativas inspiradas en autores contemporáneos. Esto requiere una profunda revisión de las nociones convencionales de facticidad y ficción que han influido en el desarrollo del psicoanálisis, una disciplina de por sí oscilante entre las aspiraciones científicas y las sensibilidades literarias. Siguiendo el énfasis puesto por filósofos como Michel Serres, Bruno Latour y Donna Haraway en la dimensión ontológica, se ofrecerá un retrato constructivista y prospectivo de la psicoterapia en tanto proceso que no limita la imaginación a la mente individual, sino que la conceptualiza como una práctica refinada que le permite al paciente apersonarse de sus devenires. Así pues, la imaginación puede ser finalmente posicionada como la piedra angular de un proceso de sanación doble: tanto de las enfermedades del paciente, como de las paradojas epistemológicas del psicoanálisis.

Palabras clave: figurabilidad; imaginación; psicoanálisis; cientificismo.

Introduction

Ever since the birth of psychotherapy, there have been an ongoing debate about its scientificity and the (in)convenience of the irruption of subjectivity in it. Nowadays, with the burgeoning crossings of evidence-based medicine and AI systems, it might seem that therapy finally might become a standardized device, anchored in proven causal relationships between risk factors and mental illness. Still, subjectivity – with its inevitable pliability and taste for fantasies – remains an open question. In this article, engaging simultaneously with contemporary philosophers of science and present-day psychoanalysts, we shall explore whether imagination is a danger for the project of a scientific therapy or, perhaps, a necessary condition for it. Despite the fact that there are many other types of psychotherapies critical of the scientism of double-blind trials and protocolization of treatments, we will limit ourselves to psychoanalysis since in this discipline the conjuncture between fact and fiction, rationalism and imagination, is more salient. Our interest is not to plea for a more flexible science that condescendingly accepts the inescapability of subjectivity. Rather, we will argue that imagination is a transversal phenomenon in psychoanalysis and that – with the recognition of its ontological specifications and its proper technical training – fictionality is a key ingredient for both the patient's emotional well-being and psychoanalysis' epistemological paradoxes.

A neglected question; or the pebble in the shoe of health sciences

Science does not know its debt to imagination.
Ralph Waldo Emerson, *Poetry and Imagination*

The mind sickens due to wild fantasies that hinder the subject's ability to navigate the world and relate to others. Conversely, the mind heals thanks to the faith put in a caring therapist and a brighter future. Thus, imagination is both poison and remedy: a pharmakon. Isabelle Stengers claims that imagination haunts psy-sciences, whether we consider the pejorative definition of the placebo effect given by the pharmaceutical industry or the aversion to suggestion present in psychoanalysis[1]. Ever since medicine aspired to the status of modern science, argues the Belgium philosopher, it has been concerned not only in healing patients, but mainly in distinguishing between real and false cures. On the one hand, a real cure would be caused by an active chemical substance or by the adequate analysis of transference (more below). On the other hand, any cure polluted by the patient's illusions or the therapist's subjectivity will be immediately labeled as false. Although this *modus operandi* has proven useful, Stengers acutely observes that there is a difference between expelling imagination from treatments and actually explaining its healing powers[2]. Certainly, medicine – including psychiatry and clinical psychology – can perfectly continue working within this framework, but nothing prevents us from exploring the path opened by Stengers. If we could enhance our comprehension of imagination, perhaps we might dissolve this pharmakon, extract its healing properties and discard its harmful effects.

To truly understand this challenge to psy-sciences, we should start by reviewing how Stengers retells the history of mesmerism. Franz Anton Mesmer claimed to have invented a liquid capable of curing several diseases regardless of the demographic conditions of patients. He also stated that his creation was amenable to experimental testing. In 1784, an interdisciplinary commission was appointed by Louis XVI to verify Mesmer's declarations. Stengers remarks that the commission did not play a role of passive observation, but rather:

> invented a much more active method of investigation. It asked an accomplice magnetizer to magnetize subjects susceptible to magnetic crises without warning them; to magnetize them pretending to magnetize another person, and even, the subject having had her eyes blindfolded, to magnetize one part of her body while announcing that he was going to magnetize another[3].

This procedure, a sort of ancestor of double-blind trials, allowed the commission to decree that Mesmer's fluid was ineffective and that cures were produced by the power of imagination. Note this striking paradox. The commission developed an imaginative method which provided conclusive results – and yet, it did not hesitate in denouncing the success of mesmerism by pointing out imaginative cures. We could say that imagination is also an epistemological *pharmakon*: sometimes it helps scientists in their pursuit of knowledge, while other times it is as misleading as the siren's song.

[1] Nathan, T. & Stengers, I., 2018, *Doctors and Healers*, London, Polity Press, 99.
[2] *Ibid*., 108.
[3] *Ibid*., 93.

This primal scene of the scientific aspirations of medicine established a frustrating fact: «the cure proves nothing»[4]. Contrary to anatomy or physiology, applied medicine cannot resort to the suffering body as a reliable witness, since it can be healed for the wrong reasons. In this sense, health sciences – mimicking the methods of laboratory sciences – have been trying to purify the body and the illness from the pervasive influence of imagination. The pharmaceutical industry strives to find pills that remain operative irrespective of the singular psychiatrist who prescribes them. Psychoanalysis struggles to demonstrate that the transference[5] emerges solely from the patient's prior unconscious conflict without a trace of induced material from the therapist. Again, such rationale is that of isolation, not explanation. The royal commission was not truly interested in figuring out the hidden mechanism behind Mesmer's cures, but to disqualify him as a charlatan by demonstrating that the fluid on its own was futile. Psychoanalysis performed a similar maneuver when Freud distanced himself from hypnosis. In 1973 David Rosenhan showed that psychiatric diagnosis could be easily misdirected by the interference of fictional symptoms reported by pseudo-patients. A more recent case would be the way Nature discredited Jacques Benveniste claims about the memory of water simply by pointing out the lack of rigor in his randomization techniques. All these cases reprise the same skeptic, gate-keeping attitude of the royal commission. Stengers stresses that modern medicine, exasperated by the unreliableness of the suffering body, defends its scientific status by witch-hunting unconventional healers.

One might be tempted to appeal to cognitive sciences to elucidate the nature of imagination and therefore solve this impasse. It is indeed remarkable that the seminal work of William James, Graham Wallas and Marx Wertheimer – on the stream of consciousness, creative process and productive thinking, respectively – still inspires a great deal of psychometric instruments and laboratory experiments. After more than three decades of cognitivism dominance, psychologists have recently taken distance from the computational model of the mind[6] and they have started to explore the synthetic capacities of the psyche[7]. Still, we should not overlook the sharp hiatus between cognitive and clinical psychology. As Ashmore, Brown & Macmillan have argued, the former is capable of widely replicating experiments and exporting their results to other fields, while the latter is constrained to a case-by-case basis[8]. In other words, experimental methods are suited for cognitive sciences, but psychiatry/psychotherapy ought to adopt another style of scientific reasoning: casuistry. Stengers goes as far as questioning that imagination is subjectable to experimentation of any kind. She states that «[s]ubjects can't be stopped imagining, interpreting or taking up positions on what they are being subjected to or on what they feel»[9] and also that «[f]rom the experimental point of view, the question

[4] *Ibid*., 94.

[5] See the handful definitions given in Laplanche & Pontalis, 1988, *The Language of Psycho-Analysis*, London, Karnac Books. Transference is «a process of actualization of unconscious wishes. Transference uses specific objects and operates in the framework of a specific relationship established with these objects. Its context par excellence is the analytic situation. In the transference, infantile prototypes re-emerge and are experienced with a strong sensation of immediacy» (455). Its counterpart, countertransference is «[t]he whole of the analyst's unconscious reactions to the individual analysand especially to the analysand's own transference» (92).

[6] Cfr. Langley, P. et al., 1987, *Scientific Discovery*, Cambridge, MIT Press.

[7] Cfr. Morrison, H. et al., 2019, "What is a Psychological Task? The Operational Pliability of 'Task' in Psychological Laboratory Experimentation", in *Engaging Science, Technology, and Society*, vol.5, 61-85.

[8] Ashmore, M., Brown, S. D., & Macmillan, K., 2005, "Lost in the Mall with Mesmer and Wundt: Demarcations and Demonstrations in the Psychologies", in *Science, Technology, & Human Values*, vol.30, no.1, 76-110.

[9] Nathan and Stengers, *Doctors and Healers*, 110.

of imagination emerges as an obstacle because it constitutes a rival counter-power opposing the experimenter's monopoly on the definition of the therapeutic scene»[10]. In other words, imagination behaves in a ubiquitous and unpredictable manner that bans it as a controlled experimental variable. But if imagination cannot be understood through scientific means, how else could we elucidate this powerful, yet ambiguous, phenomenon?

The burden of truth; or the excesses of rationalism in psychoanalysis

Reason is the natural organ of truth;
but imagination is the organ of meaning.
Imagination, producing new metaphors or revivifying old,
is not the cause of truth, but its condition.
C.S. Lewis, *Bluspels and Flalansferes: A Semantic Nightmare*

Imagination is elusive to experimental accounts. Fortunately, in this regard, psychoanalysis presents a curious displacement: from being itself a science of the mind to becoming a singular type of literature[11]. The ongoing discussion about the disciplinary identity of psychoanalysis – natural science, social science, therapy, aesthetics, ethics, etc. – will probably never end. Some authors are strong partisans of one type of identity[12], while others seem to be indifferent to the matter[13]. Our interest is not to adhere to any particular side, but to explore the frictions between fact and fiction in the foundational writings of Freud. In this section we will explore how psychoanalysis, deeply embedded in modern metaphysics, inherited a physicalist definition of reality that is sympathetic to a vision of truth coupled with the notions of objectivity and factuality. Such perspective not only has been the Achilles heel in the debates on the epistemological status of psychoanalysis, but it also has conditioned – even distorted! – the way psychoanalysis has approached fantasy and art. Hence, if we seek a depiction of imagination from the hybrid framework of science and literature provided by psychoanalysis, we must first emancipate fictionality from the shadow of monolithic factuality.

As Donna Haraway argues, psychoanalysis has crafted a problematic naturalistic account of human subjectivity[14]. Physiology and politics are entangled in *The Future of an Illusion* (1927) and *Civilization and Its Discontents* (1930), where Freud enlisted technological development, religious beliefs and art works as means to counteract the excesses of sex and death drives. "Nature" - either as the external world or as the instinctual life boiling within the subject – ought to be dominated through "Culture". In those ominous books, the father of psychoanalysis suggested that such struggle is doomed to fail, since the reality principle ultimately bows to natural phenomena. Haraway notices that this asymmetry leads to the tacit assumption that cultural phenomena – whether they be politics, religion or aesthetics – are less

[10] *Ibid*., 111.

[11] Ogden, T., 2021, "Analytic Writing as a Form of Fiction", in *Journal of the American Psychoanalytic Association*, vol.69, no.1, 221-23.

[12] Grünbaum, A., 1999, "The Hermeneutic Versus the Scientific Conception of Psychoanalysis: An Unsuccessful Effort to Chart a Via Media for the Human Sciences", in Aerts, D., Broekaert, J. & Mathijs, E. (eds.), *Einstein Meets Magritte*, Brussels, VUB University Press, 237.

[13] Lacan, J., 1966, "Science and Truth", in Lacan, J. (comp.) *Écrits: The First Complete Edition in English*, 2006, New York, W.W. Norton & Co., 726-45.

[14] Haraway, D., 1991, *Simians, Cyborgs, and Women*, New York, Routledge, 9.

operative[15]. What have been the consequences of this uneven narrative? Drawing from this naturalistic perspective, Robert Stoller and John Money developed in the 1960s the infamous sex/gender split. Genes, hormones and morphology (hard biological facts) dictated the sex of any person without any possible objection, while social imaginary, customs and parental relationships (soft psycho-social processes) tailored the gender identity of a subject, who has the possibility to reshape it to certain extent. This example allows us to corroborate that, even if we move from the issues of the placebo effect or suggestion, it is possible to find the same hierarchy between physical reality and psychic fantasies in numerous claims advanced by psychoanalysis.

Overall, construction of truth in psychoanalysis was influenced by Freud's scientism. Throughout his oeuvre, he insisted upon the scientificity of his theories and techniques. This is more than mere rhetoric. As Stengers indicates, «any discourse about science involves the one who engages in it: this discourse is virtually part of the scientific activity that it seeks to describe»[16]. In *A Difficulty on the Path of Psychoanalysis* (1917), Freud remarked that psychoanalysis could not fall back on the people's resistance to accept the existence of the unconscious mind and infantile sexuality. The acceptance of truth might be painful, but mental health resides in the capacity to deal with it without appealing to soothing false ideas. Here we can see imagination as a rather inconvenient issue, both for mental well-being and for any scientific project. In a latter text, *The Question of a Weltanschauung* (1933), we find a breaking point where Freud-as-a-scientist eclipsed Freud-as-a-therapist. Insofar as a science of the mind, psychoanalysis cannot indulge with philosophical, aesthetic or religious worldviews even if they aspire to noble ends. If psychoanalysis were forced to choose between scientific rigor or humanitarian charity, it should choose the former. Here, too, truth is portrayed as an ultimate good only accessible through science, while imagination is seen as entertainment or distraction.

Some critics might rightly reply that both naturalism and scientism were part of the nineteenth-century zeitgeist and it would be unfair to anachronistically judge the origins of psychoanalysis. Furthermore, the crucial "epistemological break" – to use Bachelard's expression – was not Freud's eager self-comparison with Copernicus or Darwin, but rather his abandonment of the seduction theory, which ultimately led to the formulation of the Oedipus complex. In *The Aetiology of Hysteria* (1896), Freud argued that children who experienced sexual abuse would eventually develop hysteric symptoms. A decade later, in *My Views on the Part Played by Sexuality in the Aetiology of the Neuroses* (1906), he retracted and offered an alternative explanation based on the incestuous fantasies accompanying infantile masturbation. In a letter to Fliess dated September 21 1897, the father of psychoanalysis wrote: «there was the definite realization that there is no "indication of reality" in the unconscious, so that it is impossible to distinguish between truth and emotionally-charged fiction». In other words, the unconscious mind is indifferent whether the seduction scene was an actual trauma or mere fantasies. This psychological shift greatly influenced the future developments of psychoanalysis. Post-Freudian authors purged their vocabulary from biological terms – such as "phylogeny" or "maturation" – and filled it with mentalistic notions – like "psychic reality" and "symbolization".

[15] *Ibid*., 133.

[16] Stengers, I., 1997, "Black Boxes; or, Is Psychoanalysis a Science?", in Stengers, I. (comp.), *Power and Invention. Situating Science*, 1997, Minneapolis, University of Minnesota Press, 82.

From an epistemological perspective, this can be seen as a reversal in the aforementioned hierarchy between fact and fiction: Freud discovered that unconscious fantasies are no less effective than material processes.

This re-articulation of fact and fiction might be more attuned with contemporary thought, but it still presents some problems. First, having relinquished any possible biological anchorage for hysteria, Freud still aimed for a general formulation of incestuous fantasies. While this quest was often advanced by clinical cases (Little Hans, Dora, etc.), the father of psychoanalysis also ventured anthropological speculations like *Totem and Taboo* (1912) to support his ideas. Here we find a glimpse of paradox: if the unconscious mind is equally sensitive to fact and fiction, could it be the case that our theories can also draw upon both means? Second, the schism between 'objective' ad 'psychic' reality only duplicated the notion of truth as something essential and indisputable[17]. This can be seen in the post-Freudian landscape: ego psychology being prominent in America and object-relations theory in Britain[18]. The former focused on how the subject could attain a more faithful representation of himself, while the latter concentrated on how the subject could adequately perceive its surrounding objects. Moreover, Lacan, skeptic of both trends, devised a negative function of truth – the unknowable 'Real' – as the touchstone of his theories[19]. In this sense, despite its attempt to vindicate fiction, psychoanalysis remains a clear heir of Enlightenment philosophy which maintains that the search for truth – internal and/or external – is a virtue in itself. Postmodernism taught us that too much light can be blinding. In the same vein, Stengers asks: «[w]ho can guarantee that the intention of not suggesting [i.e., adhering strictly to real cures] is not the most unstoppable force of suggestion, against which the analyst has no protection?»[20]. In short, to internalize the truth is not necessarily equivalent to propose an entirely different conceptualization of it.

So far we have reviewed the shortcomings of the articulations of truth as something natural, scientific and even psychical. They converge in a detrimental understanding of fiction in psychoanalysis. This might strike oddly at first, since Freud always professed admiration for the poets and was himself a fine writer. His theories even tailored a balance between repression and sublimation as means to deal with unconscious desires. Other concepts like "family romances", "transience" and "the uncanny" are testaments of how fictions can mobilize emotions and behavior. Still, there is a slight bias in Freud's writings that reveal that aesthetics itself is the object of admiration and not necessarily the fantasizing subject. Bruno Latour eloquently stated: «[i]f it is true that the beings of fiction have been swamped by honors, they have paid a big price: [...] they have been valued to an extreme, while too hastily denied any objectivity»[21]. In other words, what ultimately matters is the reified piece of art and not the imaginative person. For instance, if we revisit *Delusion and Dream in Jensen's Gradiva* (1907), *Creative Writers and Day-Dreaming* (1908) and *Leonardo da Vinci, A Memory of his*

[17] Green, A., 2001, *Life Narcissism, Death Narcissism*, London, Free Association Books, p.xvii.

[18] "Ego psychology" goes back to Anna Freud's (1936) *The Ego and the Mechanisms of Defense*, but mainly refers to the works of Heinz Hartmann, David Rapaport, René Spitz and Heinz Kohut. For its part, "Object-relations theory" is deeply rooted in the Freudian concepts of "identification", "internalization", "sadomasochism" and "death drive"; and was developed mainly by authors such as Karl Abraham, Melanie Klein, Ronald Fairbairn and Harry Guntrip.

[19] Lacan, J., 1955, "Variations of the Standard Treatment", in Lacan, J. (comp.) *Écrits: The First Complete Edition in English*, 2006, New York, W.W. Norton & Co., 296-302.

[20] Stengers, "Black Boxes; or, Is Psychoanalysis a Science?", 104. Elsewhere, the Belgium philosopher refers to this as «the polemical passions of truth». Stengers, I., 2024, *Hypnosis Between Science and Magic*, London, Bloomsbury Academic, 95.

[21] Latour, B., 2013, *An Inquiry into the Modes of Existence,* Cambridge, Harvard University Press, 239.

Childhood (1910), we find that Freud derives all the creative powers from repression, screen memories and incestuous fantasies. We reckon that we risk overemphasizing the scarce pejorative connotations in those texts, which otherwise widely praise the artists' genius. Yet, let us return to James, Wallas and Wertheimer for a quick comparison. Behind their dissertations of creativity, there are no hidden illness or traumas, just regular men who had refined their talents. In Freud, on the contrary, imagination is a privileged method to deal with psychic suffering, an effective and beautiful form of catharsis, but nothing more…

Even if Freud reckoned the operations of the inner psychic life and displayed veneration for art, by the end imaginations, fantasies and fictions remain thin, shallow and secondary in contrast to the triptych Nature-Science-Truth. No matter how sensitive to literature the father of psychoanalysis happened to be, he still repeated the dictum of the royal commission: one must tell apart the real cures from the false ones! We still have not been able to exit the pharmakon. Imagination is still a balsam which can provide partial relief on the condition that its dosage is strictly monitored by the doctor. Today, despite the fall of popularity of psychoanalysis, plenty of scientists and artists keep operating in this framework. Anytime the dichotomy fact/fiction is invoked the outcome will eventually favor the virtue of truth. Even if factuality is reworked with different types of accents, even if the dichotomy is re-articulated in different ways, the result will always repudiate the chimeras of imagination. Should we sever the tie between factuality and fiction altogether? Unfortunately, this would amount to failing to answer Stenger's epistemological challenge. We must seek a definition of imagination that is simultaneously positive and embedded in the rationality of health sciences. It would be shameful to abandon science and evoke the discourse of therapy as an art or artisan activity. This stance is not even convenient for artists with no scientific pretensions, as we can see in Latour's warning: «it is much too easy for "artists" [or scientists] to take the unreality of their creations for granted and indulge in "real fakery" in the name of the "enduring rights of the imagination and creativity." "Poetic license": how much self-indulgence we risk allowing ourselves in your name…»[22] Indeed, to suspend the truth/false criterion to praise the healing powers of imagination would lead to a self-indulgent attitude. The inventiveness of the healing cannot be reduced to the compliance of doctors who rely on the "make-believe" of naive patients. No good therapy has ever been born out of such disrespectful stance. And no good science has ever been born out of permissiveness about the haunting questions.

Fiction externalized; or the ontological dignity of phantasy

> IMAGINATION, n. A warehouse of facts, with poet and liar in joint ownership.
> Ambrose Bierce, *The Cynic's Dictionary*

Despite the apparent defeat, we now are equipped with finer resources to continue with our quest. After becoming aware of the pitfalls of Enlightened truth and the insufficiency of imagination as a suspension of disbelief[23], we can return to the hybrid identity of psychoanaly-

[22] *Ibid*., 240.

[23] *Ibid*., 241. For Latour, a work of art is not open to any reinvention or interpretation, since it is the folding of the partial subjectivities it engenders throughout its circulation. The truth of a fiction lies in its blooming effects. In this sense, therapies such as the proposed by Carl Rogers, Fritz Perls or Michael White fall short insofar they provide the patient with narratives to ease their symptoms, regardless of the pragmatic adequacy of those stories once imported back to the

sis. If science and literature are not antagonistic at all, as Michel Serres constantly expounded, then might we still profit from the paradoxes of psychoanalysis. The French polymath tried to enable new forms of thought by restoring the continuity between themes and objects usually foreign to each other. His oeuvre is populated by fable animals, archaic etymologies, dusty ruins, math theorems, sacred scriptures and other picturesque characters. One does not find in his books any trace of the frictions between factuality and fiction previously exposed. For Serres, science and literature are different means to organize the chaos of the cosmos and our own ways of comprehending it[24]. The former tends to propositional knowledge, while the latter prefers metaphorical formulations, but they both work to render intelligible the background noise which is reality itself – ourselves included. Psychoanalysis, in its bi-modality[25], deals with such arrangements of chaos in a very particular way. On the one hand, psychoanalysis – not very distant from thermodynamics and information theory – provides detailed explanations of how distinct levels of the mind are hierarchically integrated into a dynamic system. On the other hand, psychoanalysis – as a myth-generating machine – waves narratives where multiple times, intricate spaces and complex actors coexist. Perhaps this symmetrical, more balanced version of psychoanalysis can take us further in our pilgrimage.

From this stance, we can question whether imagination is an exceptionally human faculty at all. Also coming from chaos theory and thermodynamics, Prigogine noted a difference when imagination is said to be locked up within the closed-system of the human mind and when it is construed as an exchange between two or more open-systems[26]. This latter view is not restricted solely to humans – i.e., brainstorming and other types of social cognition – but it can be extended to human/nonhuman couplings and even to nonhuman/nonhuman pairings. The Nobel prize winner spoke of the way a physicist usually engaged in dialogue with nature itself to tailor his theories. Going back to psychoanalysis, Winnicott's "transitional object" is a clear example of how human children require a particular external object in order to develop their capacities of daydreaming, symbolization, etc.[27] Make no mistake, imagination is not latent, prefigured or *in potentia*, patiently waiting for the right time to project itself upon a blank-screen. Rather it is the object – usually a toy, teddy, blanket, etc. – which gives shape and substance[28] to the child's mental operations. But what about the imagination occurring in absence of any human subject? What would an imaginative process between two nonhumans look like? Haraway retells the case of the *Ophrys apifea*, a kind of orchid that mimics the genitalia of bees to lure them to pollinate them[29]. This is not a mechanical copy with deceptive goals, but rather a gesture in which a natural entity interprets – in a completely semiotic and

patient' life. In this sense, they have not moved an inch from the Freudian critique of culture as a repertoire of lenitive discourses.

[24] Serres, M., 1982, *Hermes*, Baltimore, John Hopkins University Press. The French polymath spoke of «chimerical spaces», «temporal vectors» and «homeorrhetic systems» to describe both the human and the world he inhabits. Against the Kantian view of time and space as *a priori*, here we find fluctuating entities and processes, which are not very different from the bizarre nature of the unconscious mind.

[25] Cfr. Modell, A., 1978, "The Nature of Psychoanalytic Knowledge", in *Journal of the American Psychoanalytic Association*, vol.26, no.3, 651; and also Green, A., 2001, *Life Narcissism, Death Narcissism*, London, Free Association Books, p.xxii.

[26] Prigogine, I., 1999, "Einstein and Magritte. A Study of Creativity", in Aerts, D., Broekaert, J. & Mathijs, E. (eds.), *Einstein Meets Magritte*, Brussels: VUB University Press, 101.

[27] Winnicott, D., 1971, *Playing and Reality*, London, Tavistock Publications.

[28] Serres, Latour, Stengers and Haraway are sympathetic to Deleuzian philosophy, which prioritizes becoming over being. These metaphysics are frequently at odds with terms such as "potential" or "substance", heritage of Aristotle.

[29] Haraway, D., 2016*, Staying with the Trouble,* Durham, Duke University Press, 69.

aesthetic sense – another. The *Ophrys apifea* is particularly interesting since it has adopted the colors and shapes of an insect that no longer exists. The very flower is, in itself, a re-imagination of the extinct bug. In other words, the longing for its dead lover is more important for the orchid's than the urge of finding new suitors. In a similar vein, the recent book by Jaap de Roode[30] collects several cases of animals that interpret vegetables and engage in healing practices with them. Thus, neither imagination nor medicine are monopolized by humans.

Nonetheless, we do not want to fall (like Giordano Bruno) into the hermetic tenet that imagination is somewhat of an autonomous cosmic force traversing all living things, which can be mastered given the proper training[31]. Under the light of modern metaphysics, fantasies – or better, "phantasies" echoing its archaic spelling and rendering it closer to "pharmakon" and "phantom" – are immaterial, ineffable, evanescent, elusive, and so forth. Wishing to step outside this narrow framework, Latour has woven a list of specifications or "felicity conditions" for imaginative processes. This perspective offers the advantage of conceptualizing fiction without opposing it to facticity, nor to surrendering it. Instead of a "suspension of disbelief", we should explore the conditions in which an imaginative act or an operative fiction is well-fabricated, with consistency and durable effects. The false causes of healing were described as polluted by subjective influence and as transitory, in contrast with the everlasting healing of real objective causes. We are no longer entangled by the pernicious subject/object and fact/fiction dichotomies, so there is no reason to fear the seemingly absolute difference between the ephemeral and the eternal. After all, we do not want to purify imagination, but to gain a deeper understanding of its role in the healing processes. Hence, in the remainder of this section we will review some key points of this Latourian view of imagination, trying to keep a close dialogue with our already decanted version of psychoanalysis.

First, just like anything else, imagination requires material support. However, this does not allude to the way neurologists remind psychologists that there would not be any mental activity without brains. To grasp this point, let us take for instance works of art, which are never rigid objects fixed upon a static stage, but rather constantly evolving products that circulate in networks far wider than the scheme emissor-message-receptor. In words of Latour:History and sociology have made themselves capable of deploying the trajectories of a work [or art] without skipping a single segment of these arrangements, as always heterogeneous, in which one has to take the whims of princes and sponsors into account as well as the quality of a keystroke on a piano, the critical fortune of a score, the reactions of a public to an opening night performance, the scratches on a vinyl recording, or the heartaches of a diva[32].

These networks are both tangible and thriving in the same way individual imaginations are concrete and colorful. We could start speaking of oneiric locations and artifacts without fear of being denounced for reifying metaphors. Going back to *Delusion and Dream in Jensen's Gradiva*, the imaginative process is not only contained in Hanold's dreaming, but it is also present in Pompeii, where antique ruins merge with countless romances. In the case of

[30] de Roode, J., 2025, *Doctors by Nature*, New Jersey, Princeton University Press.

[31] I fear Stengers herself ended up close to this eccentric position. While the training of imagination in clinical settings might sound reasonable, the Belgium philosopher discussed the suggestion technique developed by maverick psychoanalysis François Roustang in the following terms: «[suggestion] has in fact inherited from hypnosis its claim to organize under a single category the products of a parasitic imagination, hallucinations, beings that, for other peoples, what we call trance is thought to connect to. Roustang's potentiality may well reconnect humans to the cosmos». Stengers, *Hypnosis Between Science and Magic*, 132.

[32] Latour, *An Inquiry into Modes of Existence*, 242.

Leonardo da Vinci, A Memory of His Childhood, the credit of the imaginative process should not be limited to Leonardo's capacity to deal with early traumatic experiences. Instead, we should also take into account the resurgence of Christian imagery by the end of the Renaissance, the development of a subtler chiaroscuro technique and the constant wars between France and Italy. In short, psychoanalysis would benefit immensely if it unleashed imagination from the cage of the "psychic reality" or "inner world".

Secondly, fiction beings «impose themselves on us after imposing themselves on those responsible [authors] for their instauration [...]. They come to our imagination – no, they offer us an imagination that we would not have had without them»[33]. This is related to the effects of the aforementioned transitional objects. Another analogous phenomenon would be the aesthetic reciprocity, proposed by Meltzer as the process by which children assimilate – being careful of not turning overwhelmed – the aesthetic impact of the external world incarnated in the mother as the primal object[34]. The mind is not inherently sensitive to beauty, for it must be first aestheticized by the seductive beings of fiction embodied in the aforementioned artistic networks. In the words of Latour: «[i]magination is never the source but rather the receptacle of beings of fiction. [...] one becomes imaginative when one is gathered in by works of fiction»[35]. What is remarkable about Meltzer's proposal is that interiority is not taken for granted in the development of the child, but earned through laborious games in which the patient depicts herself in different artistic media (drawings, sculptures, customs, etc.). We cannot overstate that imagination is "anthropogenic". Furthermore, here we can observe once more the conjunction of imagination as the object of study and as part of the research subject. Like Freud's incursions in archaeological speculations, Meltzer ventured into the imaginative scenario of intrauterine life in an attempt to understand the proto-thought of fetuses – and he employed films, novels and poetry to gather a vocabulary to express such almost indescribable sensations. That is our glimpse of paradox: the scientific inquiry of imagination demands for imaginative tools and methods.

A final point: «the beings of fiction [...] come to us and impose themselves, but with a particular wrinkle: [...] they need our solicitude»[36]. Unlike the image offered by Lévi-Strauss of the quasi-divine myths that speak themselves throughout the subject's mouth, fiction remains virtual and only becomes actualized once a subject voluntarily summons it. Note a telling parallel with psychoanalysis: it cannot not exist, self-sufficiently, as a science interested in the unconscious mind, but rather as a therapy activated when a patient is willing to explore his own unconscious in order to achieve a cure. Freud-the-neurologist needed the solicitude of his patients with persistent hysterical symptoms to become Freud-the-psychoanalyst. Latour continues: «if we don't take in these beings, if we don't appreciate them, they risk disappearing altogether [...] their objectivity depends on their being reprised»[37]. Certainly, repetition is pivotal in psychoanalysis. Shall the psychoanalyst reiterate the *ethos* of the royal commission when a disobedient patient explores other forms of therapy? Or will the psychoanalyst allow himself to be surprised by the conceptual formulation and observed phenomena that he might have taken for granted? My fellow therapists and I know very well about the painful situation

[33] *Ibid*., 240,
[34] Meltzer, D., 1987, "On aesthetic reciprocity", in *Journal of Child Psychotherapy*, vol.3, no.2, 3–14.
[35] Latour, *An Inquiry into Modes of Existence*, 246.
[36] *Ibid*., 242.
[37] *Ibid*.

of being alone in the consulting room, waiting for the appointed patient to arrive, waiting for future patients to reach out asking for help. It is not enough for a subject to be mentally ill, he must be ready to solicit therapy. If patients do not express their desire of being assisted, then there is no point in being an always-available therapist. Another way to express this peculiar situation would be:

> A terrible obligation, Péguy called it, the one that makes every reader responsible for Homer: the absence of Homer's reader swallows up the word; the negligence of Homer's reader reduces it to rubble. If we call the beings of fiction fictive or fictional, it is not because they are false, unreliable, or imaginary; it is, on the contrary, because they ask so very much from us and from those to whom we have the obligation to pass them along so they can prolong their existence. No other type of being imposes such fragility, such responsibility[38].

Imagining together; or how psychotherapy advances through mutual figurations

> Imagination is the beginning of creation.
> You imagine what you desire; you will what you imagine;
> and at last you create what you will.
> Bernard Shaw, *Back to Methuselah*

To finally define imagination we ought to return to psychotherapy to observe the ecology of practices in which this phenomenon is embedded. By now it should be clear that neither the patient's pathology nor the therapist's technique are fixed. In other words, the patient's diagnosis does not refer to an underlying, preexisting disease anymore than the therapist's method is derived from an already established theory. To put it yet another way, the therapist is not the representative of the unquestionable knowledge of modern medicine which will assist the helpless patient[39]. We are already familiarized with the transversality of imagination. It permeates semiological categories; it informs clinical hypotheses; it produces anthropogenic effects; it triggers transformations in the subjectivity; and so forth. Since we are not dealing with the excavation of an archaic truth responsible for the illness, we should delineate therapy in a prospective fashion: it does not reveal prior meanings, it fabricates novel ones[40]. In this section we shall consider imagination not as an individual process or as a bilateral situation. Imagination must be tamed, enacted and sustained in a very particular manner – which eerily surpasses local interactions – to produce the desired outcome. Once strengthened with the ontology of fiction, leaps of imagination can be characterized as the action that permits a being to embrace his becoming[41]. In this sense, "false cures" will no longer refer to blind faith or make-believe that pollutes scientific research. A cure would be unsuccessful or ineffective if it does not enable the subject to engage in the networks where his psychic life can be metamorphosed[42]. Thus, if a patient remains sick after receiving medicine or therapy, we should ask

[38] *Ibid.*, 249.
[39] Nathan & Stengers, *Doctors and Healers*, 119.
[40] Stengers, "Black Boxes; or, Is Psychoanalysis a Science?", 102.
[41] Stengers, *Hypnosis Between Science and Magic*, 116.
[42] See chap. 7 and chap. 9 of Latour's *An Inquiry into Modes of Existence* to have an account of psychotherapy where architecture, polytheism, witchcraft, magazines and videogames are crossed.

whether those procedures were imaginative enough. Lastly, we will venture that the principal reason behind those shortcomings is the therapist's resistance to submitting himself[43] to the touch of fiction.

Aesthetic networks are helpful in rendering visible the quasi-ineffable operations of imagination. Psychotherapy is neither a disembodied dialogue between patient and therapist nor the standardized application of techniques informed by abstract theories[44]. On the one hand, there is the patient's suffering body alongside the therapist's supposedly healthy body. On the other hand, there are nonhuman entities such as the couch, the clock, soundproof walls, warm lighting, etc. How are these heterogeneous actors arranged? The couch is pivotal, since the horizontal lying of the patient emulates the oneiric feeling. A window or a painting might help in letting her mind wander. Free-association – a non-rhythmic dance between patient's utterances and analyst's interpretations – is a phonetic device oriented to the same goal. The absence of recording devices indicates that precise recollection is not a priority in the session. Actually, sometimes it feels like silence is more significant than verbalized discourse. This assemblage is not as intricate as the labs and factories where antidepressants are manufactured, yet it is a propitious setting to foster the intimate and imaginative encounter between the patient and her therapist. In the words of contemporary psychoanalyst Thomas Ogden:

> There is a particular form of significance generated in the analytic context that is unique to that setting. For the analysand, the consulting room is a profoundly quiet place as he realizes that he must find a voice with which to tell his story. This voice is the sound of his thoughts, which he may never have heard before. The analysand may find he does not have a voice that feels like his own. This discovery may then serve as the starting point of the analysis[45].

Note also that, in this scenario, the patient does not only retell a dream from previous nights, she is also encouraged to co-design with her therapist new dream-like materials. This *in situ* fabrication and interpretation of material, unlike the hermeneutics of Ricoeur and Habermas, does not signal a correspondence between a cryptic symbol and a repressed desire. Rather, associations are translated first into metaphors and then into narrative constructions that compose new knowledge for all the parties involved[46]. In these narratives other human and nonhuman actors emerge indirectly. The patient tells stories about her husband, house or pet. Such allusions are not referential, neither to real objects nor to internal objects intertwined in the fabric of unconscious fantasies. The beings inhabiting the patient's discourse have, to borrow Alva Noë's expression[47], a fragile variety of presence which is more experiential than intellectual. In the peculiar ambiance of the session, narratives and dreams behave similarly

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[43] In the following section, we shall speak of the therapist in masculine and of the patient in feminine. Stengers, somewhat ironically, employs such formula to denounce the gender asymmetry in psy-sciences and to stress the limitations of the scientific rationale that privileges rationalism and standardization over affection, care and healing.

[44] Slife, B., Ghelfi, E. & Fox, S., 2018, "Psychotherapy and Scientism", in Grant, E. & Williams, R. (eds.), *On Hijacking Science*, New York, Routledge.

[45] Ogden, T., 1992, "Comments on transference and countertransference in the initial analytic meeting", in *Psychoanalytic Inquiry*, vol.12, no.2, 226.

[46] Modell, A., 1978, "The Nature of Psychoanalytic Knowledge", in *Journal of the American Psychoanalytic Association*, vol.26, no.3, 645.

[47] Noë, A., 2012, *Varieties of Presence*, Cambridge, Harvard Univeristy Press.

in the fabrication of meaning. Incidentally echoing the kaleidoscopic philosophy of Serres, Ogden explains:

> It is essential to keep in mind that a patient's history is not a static entity that is gradually unearthed; rather it is an aspect of the patient's conscious and unconscious conception of himself, which is in a continual state of evolution and flux. In a sense, the patient's history is continually being created and re-created in the course of the analysis. Moreover, it is by no means to be assumed that the patient has a history (i.e., a sense of historicity) at the beginning of analysis. In other words, we cannot take for granted the idea that the patient has achieved a sense of continuity of self over time such that his past feels as if it is connected to his experience of himself in the present[48].

We can further apply this constructivist perspective and claim that even transference, the cornerstone of classic psychoanalysis, is invented rather than discovered. Precisely because Freud could not find any «indication of reality» in the unconscious mind, he had to abandon the idea of healing the actual trauma and its neuro-psychological sequels. This means that psychoanalysis, albeit capable of diagnosing and explaining neurosis, does not intervene upon them. Transference neurosis, on the contrary, is the artificial phenomenon where numerous symptoms and patterns of behavior can be reconfigured. In this regard, Stengers comments:

> Just as the eighteenth-century chemist no longer deals with the materials that he will use in the natural world, no longer studies the unpurified primary materials that the artisan transformed, but "creates his object," the psychoanalyst institutes a state that has all the aspects of an "artificial illness, " whose only arena is the "circumscribed domain" of the analytic scene. "Morbid symptoms," the primary material of the former technique [i.e., hypnosis, talking-cure], must themselves be transformed, finding themselves given the signification of transference. By reorganizing the patient's neurosis around the analyst, transference renders it intelligible, accessible, as Freud says, to the intervention of the analyst since the analyst is supposed to have remained "neutral," not responsible for the roles that are ascribed to him, and therefore able to decipher these roles and demonstrate their meaning to his patient[49].

The quotations within the passage above are extracted from the technical paper *Remembering, Repeating and Working Through* (1914). The Belgium philosopher argues that there are glimpses of constructivism in Freud's thought, so we are not committing heresy by stressing the artificiality of psychoanalysis. However, we are more interested in pointing out that the dissolution of transference neurosis indirectly impacts the "original" neurosis, not by changing historical events, but by emancipating the patient from the past. Analysis, recall its etymology (ἀνάλυσις), means "to break up" or "untie" something. Therefore, to analyze the

[48] Ogden, "Comments on transference and countertransference in the initial analytic meeting", 243, ff4.
[49] Stengers, "Black Boxes; or, Is Psychoanalysis a Science?", 97.

transference neurosis amounts to unknotting the amalgamation of the patient's past and present. When the analyst carefully convinces the patient that he will not act in the same fashion as her earlier caretakers, fact and fiction cease to be ill-articulated. In this point we can prefer object-relation theory over the Freudian adagio "to make the unconscious conscious", considering instead that once the patient is released from the enclosed system of his private fantasies and internal object relationships, she can re-enter the world of external objects – quite imaginative themselves, for sure – and allow her to be surprised by them.

Until now we might get the impression that only the patient performs the imaginative process, while the analyst limits himself to organizing the material. Yet psychotherapy is a far more entangled experience. In transference, the therapist becomes a content of imagination, an object melting with other representations inhabiting the patient's inner world. At some point these fantasies will be contrasted with the therapeutic relationship itself, but this does not mean the therapist condescendingly allows those fabulations to emerge only to correct them afterwards. Again the words of Ogden:

> the analyst must allow himself to be created/molded by his patient in reality as well as in fantasy. Since the infant has a role in creating his mother, no two infants ever have the same mother. Similarly, no two patients ever have the same analyst. The analyst experiences himself and behaves in a subtly different manner in each analysis. Moreover, this is not at all a static phenomenon: in the course of each analysis the analyst undergoes psychological change, which in turn is reflected in the way he conducts the analysis[50].

The irreplicability of the situation is twofold. On the one hand, despite the claims of orthodox psychoanalysts, the subjective uniqueness of each therapist eventually overcomes any pretension of technical standardization. «[B]ecoming an analyst involves developing an "analytic style" that is uniquely one's own, as opposed to adopting "a technique" handed down from previous generations of analysts. In so doing, we invent psychoanalysis for each patient»[51]. On the other hand, in the analysis of countertransference, the therapist reacts to the idiosyncrasies of each patient. In doing so, he reflects about his emotional responses and deploys interpretations that help him to elaborate such reactions. It bears repeating that interpretations involve both patient and therapist: the former seeks clarity about her life, while the latter pursues lucidity about the relationship with each of his patients.

We can outline the analysis of transference and countertransference as a process of mutual figuration. Figurability, a common topic of semiotics and psychoanalysis[52], is the ultimate goal of imagination. Let us return to the ontology of fiction developed by Latour to further elaborate this point. As we saw, the works of art widely exceed the exchange between an

[50] Ogden, "Comments on transference and countertransference in the initial analytic meeting", 241.

[51] Ogden, T., 2019, "Ontological Psychoanalysis or 'What Do You Want to Be When You Grow Up?'", in *The Psychoanalytic Quarterly*, vol. 88, no.4, 671.

[52] Latour, *An Inquiry Into Modes of Existence*, 243. Latour, deeply opposed to mathematical formalism and conventional materialism, prefers to speak of "raw materials" and "figures". The former are not limited to cold, solid, inert objects, while the latter are not elusive of anything structural, precise or static. Hence, "figurability" would be the art of rearranging raw materials to produce wider networks connected to innovative audiences, a process in which the silhouette of a fictional being gets sharper and easier to identify.

emissor and receptor. In the domains of aesthetics and fiction there is a crafty orchestration of the context of production, the context of reception, the solicitation of the audience, the reprises and commentaries, the networks of material techniques and artefacts, the beings conjured by the content of the discourse and the diverse perlocutionary acts derived from the re-enactment of the piece of art. Latour (2013, p.247) proposes a way to hierarchically ordering such gathering of elements:

> As soon as the raw materials begin to vibrate toward figures that cannot, however, be detached from them, and toward whose peculiarities they never cease to refer, two new levels are immediately generated, the one beyond, what is expressed, level n+1, and the other, beneath, level n-1, that of the addressment[53].

The material frames (arranged upon solicitation) which support the operations of fiction would be "level n". The semantic dimension of discourse (beings with an indirect and fragile presence) would be "level n+1". And the choreography between transference and countertransference (often existing beneath the surface in the shape of non-verbal gestures, hesitations, Freudian slips, etc.) would be "level n-1". Perhaps some sophisticated literary critics might disagree with Latour's rough philosophy of fiction. Yet it is astonishing that his template – unlike the Procrustean bed of scientism – can be used to adequately describe the kind of exchanges occurring within the consulting room. Also, by taking into account the three levels of figuration, it is possible to comprehend our previous claim about imagination being more-than-bilateral and even more-than-human.

Psychoanalysis is fiction through and through. Therapy is the technical manipulation of the imaginative processes emerging in a complex scenario, aiming to release the patient from her past in order to welcome her future. These propositions might strike as overly poetic for any other practitioner in the field of health sciences. Have we abandoned along the path the pursuit of "health" and "science"? Not quite. At this point we reach the heart of Stenger's challenge to psychoanalysis. Let us consider this provocative passage:

> Moreover, it is perhaps the analyst much more than his "analysand" who pays the price for his capture in an apparatus linking "truth" and the discovery of a blind and obstinate indifference, dismissing as fiction everything that analysis charges itself with undoing. For the analyst is exposed by "modern" (but not scientific) psychotherapeutic techniques to ply his trade as "impossible," to borrow Freud's expression, and to dedicate himself to the service of this impossibility. As for the patients, they remain free to circulate[54].

And also this penetrating excerpt:

> It is not in the name of an abstract image of science that I am defining this obviously heavy price to pay [truth over fiction] (but, allow me to ask, who more than analysts, given what they demand of their analysands,

[53] *Ibid*., 247.
[54] Stengers, *Hypnosis Between Science and Magic*, 143.

> should be able to put into suspense the certitudes at the heart of their life?). And neither is it solely because this price is historically logical: it is in fact logical that the possibilities eliminated [i.e., hypnosis, suggestion, imagination] in the name of an apparently adequate and sufficient solution reappear when this solution has demonstrated its limits; [...] it is logical to again raise the question of knowing what suggestion can do in its many diverse modalities from the moment it is stripped of the illusion that the one who suggests knows [beforehand] what he is doing and can control the meaning and consequences of his suggestions with regard to the one he is addressing; and finally, it is logical that it is analysts who are intellectually and affectively among the best qualified to take these new risks[55].

Indeed, if a therapist demands his patient to question even the most basic assumptions about her life, he should reciprocate. Could he question the apparent scientificity of psychoanalysis based on the exclusion of imagination? Could he question the supposed neutrality required for the analysis of transference? Could he include his counter-transference, not as an extension of an already stabilized technique, but rather as an unpredictable phenomenon? Could he embrace the re-articulation of fact and fiction that is required for both the well-being of the patient and for psychoanalysis itself? We are tempted to argue that while this sharp criticism is pertinent to some portions of psychoanalysis (Freudian, Lacanian, ego-psychology, etc.), other schools are more sensitive to these issues (object-relation theory, inter-subjectivism, etc.). But perhaps it is better to leave those questions open…

To end this section, let us briefly return to Haraway, whose writings are especially concerned with the political and ethical implications of scientific rhetoric and practice. Insofar psychoanalysis entails the mutual figuration of the therapist and his patient, we could qualify it as a "sympoietic" enterprise[56]. Or, as Winnicott used to say: «[p]sychotherapy takes place in the overlap of two areas of playing, that of the patient and that of the therapist»[57]. Another concept particularly important in Haraway's philosophy is "holobiont", first coined by evolutionary biologist Lynn Margulis. Against the modern obsession with individuality, Haraway speaks of critters who are engaged in becoming-with processes of hospitality and parasitism. This «intimacy of strangers»[58] is psychoanalysis in a nutshell. We can rely in Ogden's loquacity one last time: «the analytic relationship is one of the most formal and at the same time one of the most intimate of human relationships»[59].

If we take seriously this emphasis in collective becoming, we should redefine our understanding of health. Is it the goal of therapy to produce rational subjects committed with the anti-fetichist mission of debunking illusions? Or is it the manufacture of docile subjects with a smooth functionality inscribed in a dangerous economical system? Haraway is skeptical of any grandiloquent discourse about the higher quality of life promised by science. What she names «staying in the trouble» consists of:

> the recuperation in complex histories that are as full of dying as living, as

[55] Stengers, "Black Boxes; or, Is Psychoanalysis a Science?", 106.
[56] Haraway, *Staying with the Trouble*, 58.
[57] Winnicott, *Playing and Reality*, 38.
[58] Haraway, *Staying with the Trouble*, 60,
[59] Ogden, "Comments on transference and countertransference in the initial analytic meeting", 230.

> full of endings, as beginnings. [...] I am not interested in reconciliation or restoration, but I am deeply committed to the more modest possibilities of partial recuperation and getting on together. So I look for real stories that are also speculative fabulations and speculative realisms. These are stories in which multispecies players, who are enmeshed in partial and flawed translations across difference, redo ways of living and dying attuned to still possible finite flourishing, still possible recuperation[60].

Realism and fabulation, rationalism and fiction can work together in the struggle for survival. Imagination is not only an indispensable part of therapy, but also an end in itself. Healthy is the one who can master his imagination and use it to keep on living. A similar view was anticipated, more than fifty years ago, by maverick psychoanalyst Charles Rycroft, who claimed:

> the aim of psycho-analytical treatment is not primarily to make the unconscious conscious, nor to widen or strengthen the ego, but to re-establish the connexion between dissociated psychic functions, so that the patient ceases to feel that there is an inherent antagonism between his imaginative and adaptive capacities[61].

Perhaps imagination has never been a pharmakon after all, but our critical misunderstandings of the nature of truth and fiction, science and art, sickness and health, had misguided us to believe so. Hopefully we can start to undo this path and sail in another direction.

Conclusion

Stenger's epistemological challenge to health sciences served us like Ariadne's thread throughout this article. We first took distance from the *modus operandi* of the royal commission: to disqualify charlatans and to reduce imagination to an experimental variable. Then we revisited some seminal texts of psychoanalysis, trying to liberate them from the excesses of rationalism and insisting on the hybrid disciplinary nature of psychoanalysis. Afterwards we explored the ontological dimension of fiction: from the material vessels than render it possible to the anthropogenic effects of the works of art. By this point, the question was no longer to demarcate "real" from "false" cures, but to inquire into the methods than strengthen imagination and extend their effects. Lastly, we offered a detailed account of psychotherapy as a practice that surpasses the bilateral relationship between patient and therapist. In this prospective depiction, psychotherapy is the art of engaging in imaginative processes which transform the figurability of all the parties involved. This, in turn, obliged us to reconsider the very notions of "health" and "sciences" as something beyond functionality and rationality. After all these journey, we can safely assert that imagination is not an obstacle to treatment, but – quite the contrary! – its means and its end! A century ago, in a letter to Jung, Freud claimed that «psychoanalysis in essence is a cure through love». Today, we can modify his formula as: «psychoanalysis is a cure through imagination».

[60] Haraway, *Staying with the Trouble*, 10.
[61] Rycroft, C., 1968, *Imagination and Reality*, London, Maresfield Library, 113.

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Schematism and Technology from Kant to Simondon: Towards an Experiential Schematism of the Imagination

Vincent Beaubois

Abstract:
This article explores the evolution of the concept of 'schematism' from the work of Emmanuel Kant to that of Gilbert Simondon. It focuses on how these philosophers link imagination to the understanding of images and technical objects. Kant defines schematism as the process by which the imagination connects pure concepts with sensory information obtained through experience, thereby creating a link between understanding and intuition. In contrast, Simondon reconceptualises schematism as a process central to the dynamics of invention and technological experience. He critiques the traditional notion of imagination as a mental faculty for producing internal images. Instead, he argues that imagination is primarily a mode of reception and interaction with external images, whether material or mental. According to Simondon, images and, by extension, objects possess an autonomy and dynamism, acting as mediators between humans and the world. To further explore this concept of imagination, we will demonstrate how Simondon reinterprets Kant's schematism in the context of technological invention. He thus redefines imagination as participatory and experiential engagement with material reality. His philosophy offers an original version of Kant's schematism by positioning technology as a metaphysical field of openness, through which imagination becomes the key to understanding invention as a co-creative process between humans and the dynamic world of things.

Keywords: *Schematism; Imagination; Technical objects; Technology; Ivention; Transcendental philosophy; Image theory; Simondon; Kant*

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Résumé:
Cet article explore l'évolution du concept de « schématisme » d'Emmanuel Kant à Gilbert Simondon. Kant définit le schématisme comme le processus par lequel l'imagination lie les concepts purs aux data sensibles issues de l'expérience, établissant ainsi un pont entre l'entendement et l'intuition. Simondon reconceptualise le schématisme comme un processus central à la dynamique de l'invention et à l'expérience technologique. Il remet ainsi en question la notion traditionnelle de l'imagination en tant que faculté mentale permettant de produire des images internes. Il soutient plutôt l'idée que l'imagination est avant tout un mode d'accueil et d'interaction avec des images provenant de l'extérieur du sujet, que celles-ci soient matérielles ou mentales. Selon lui, les images et, par extension, les objets possèdent une autonomie et un dynamisme qui leur permettent d'agir comme médiateurs entre les humains et le monde. Pour nourrir cette pensée de l'imagination, nous souhaitons montrer que Simondon réinterprète le schématisme de Kant à la lumière de l'invention technologique. Il en vient ainsi à redéfinir l'imagination comme un engagement participatif et expérientiel avec la réalité matérielle. Sa philosophie offre ainsi une version originale au schématisme de Kant, en positionnant la technologie comme un champ métaphysique d'ouverture par lequel l'imagination devient la clé pour comprendre l'invention comme un processus co-créatif entre les humains et le monde
dynamique des choses.

Mots clés
Schématisme ; Imagination ; Objets techniques ; Technologie ; Invention ; Philosophie transcendantale ; Théorie de l'image ; Simondon ; Kant

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Gilbert Simondon's problem of imagination

In *Imagination and Invention,* written in 1965-1966, Gilbert Simondon proposes an original theory of images. This text is essentially a course delivered at the Sorbonne University. In the preamble, Simondon emphasizes that "this course proposes a theory.[1]" It should therefore be understood as a genuine philosophical proposition of his own. However, contrary to what the title suggests, this proposition reflects more on the mode of existence of "images" than on "imagination" itself. Simondon's originality lies in showing that an image is not the product of a representation or the aim of consciousness, but rather an autonomous entity. Images must be considered as having a "relative independence[2]" from the subject that perceives them. Indeed, Simondon makes no distinction between "mental" and "material" images: for him, both types participate in the same process of mediation between the living subject and its environment.

[1] Simondon, G., *Imagination and Invention*, Eng. trans. by J. Hughes and C. Wall-Romana, Minneapolis, University of Minnesota Press, 2022 [*Imagination et invention (1965-1966)*, Paris, Presses universitaires de France, 2014], p.3.
[2] *Ibid*., p.9.

He invites us to consider images as "quasi-organisms[3]" in their own right, manifesting their own dynamism through *objective media* (such as a printed image or an object that can be perceived) or *subjective media* (such as a memory or an image that crosses one's mind or even colonizes one's unconscious). According to Simondon, the mode of existence of the image is not directed by the will of the subject because it "presents itself according to its own forces, living in our consciousness like an intruder disturbing the order of a household[4]?"

Without delving into the specifics of the "cycle of images" that Simondon presents in this work, it is crucial to grasp that *Imagination and Invention* is essentially a theory of "images," detailing how they facilitate our connections with our natural and cultural surroundings. One might expect this theory of images to imply a theory of imagination. However, the question of "imagination" is never addressed in itself. In fact, Simondon is rather uncomfortable with the concept of "imagination." He argues that this notion "can lead to misunderstandings[5]" because it refers back primarily to "faculty psychology" of the subject, suggesting that the subject produces images according to an internalist view. According to Simondon, thinking about images based on imagination "tends to exclude the hypothesis of a primordial exteriority of images in relation to the subject[6]."

However, this work quickly outlines a positive definition of imagination. In the introduction to *Imagination and Invention*, Simondon emphasizes that imagination should not be considered as a mere "activity of image production or evocation[7]," but rather as "the mode of receiving images concretized as objects, the discovery of their sense, of the perspective of a new existence for them[8]." According to this definition, imagination is primarily a "mode of receiving" external images within us. These images transcend us and emanate from objects in the world. They exist outside us ("concretized as objects") and imagination is the capacity to receive this exteriority within us. Unfortunately, *Imagination and Invention* leaves this question at the level of mere evocation without precisely developing the specific movement of this imaginative and inventive capacity. The text describes different types of images but never explicitly develops a philosophy of imagination.

The aim of this article is to flesh out this conception of imagination. To understand how imagination works in Simondon, however, we must move beyond *Imagination and Invention* and delve into his writings on technical invention. At least, that is the hypothesis I would like to explore. This is not obvious because the question of "imagination" is never directly addressed in his texts on technology, as *On the Mode of Existence of Technical Objects* as well as the unpublished texts compiled in the volumes *Sur la technique (1953-1983) (On Technology)* and *Sur la philosophie (1950-1980) (On Philosophy)*, published in 2014 and 2016, respectively. While the notion of "imagination" is not developed, these works repeatedly use the notions of "schema" and "schematism" to consider the relationship between knowledge and the invention of technical objects. Indeed, beginning with his earliest writings in 1953 and continuing through his major work, *On the Mode of Existence of Technical Objects* (1958), the concepts of "technical schema" and "operational schematism" are used consistently to

[3] *Ibid.*, p.13.
[4] *Ibid.*, p.7.
[5] *Ibid.*
[6] *Ibid.*, p.7.
[7] *Ibid.*, p.14.
[8] *Ibid.*

describe one's knowledge of a technical object (e.g., in the design or maintenance of an object). This operational schematism, at the heart of technical imagination, must be understood through an original dialogue with Kantian schematism and his philosophy of imagination.

The challenge of the *Critique of Pure Reason* is to define the *a priori* conditions of all possible experience, as well as the judgment responsible for describing it. Kant's solution is to describe this transcendental realm consisting of two *a priori* forms of intuition (space and time) and twelve pure concepts (e.g., unity, causality, and necessity) that are not acquired through experience. Rather, they constitute the possibility of phenomenal experience. The schematism of the imagination, introduced in the "Analytics of Principles" after the "Transcendental Deduction," is a pivotal moment in the first *Critique*. It addresses the issue of applying pure concepts of understanding to the sensible realm. Although these twelve categories are completely independent of the sensible world, they must be applied to it to give form to experience. In doing so, they become sensible in one way or another. Transcendental imagination becomes the solution to this problem by bridging the gap between pure understanding and sensibility during the process of knowledge.

Simondon's schematism does not address the same problem. It is not a matter of justifying the process of knowledge *a priori* but rather of accounting for the process of invention. How can something new come into being? My aim is to demonstrate that Simondon's use of the terms "schema" and "schematism" reveals a subtle dialogue with Kantian thought. This dialogue is intended to establish an original philosophy of imagination, which we can conceptualize as a "mode of receiving images," as discussed in *Imagination and Invention*[9]. My argument aims to show that this technological schematism allows us to think of the imaginative process as participation in something that transcends us and enables invention.

This schematism is established before any division between subject and object. It engages a form of *technical participation*. For example, when I tinker with a machine to understand it better, such as to repair or adjust it, my thinking becomes coupled with and aligned to the machine's functioning. *Schematism is the name for this coupling relationship*. Imagination designates not so much an activity specific to a "faculty" of the subject as it does a participation in the intrinsic dynamism of objects themselves, thereby offering the possibility of reinventing them.

I will demonstrate how this schematism illuminates the question of invention—thinking about the possibility of producing something new—while avoiding the pitfall of viewing invention as either a pure power of the subject or a pure product of chance. Therefore, Gilbert Simondon's philosophy of imagination allows us to answer the question, "How does inventive capacity come into play?"

To accomplish this, I will proceed in two stages. First, I will return to Kant's schematism of the imagination to demonstrate how the concept of technological imagination is already present at the margins of Kantian thought. Next, I will explain how Simondon understood the notion of "schematism" in relation to his thinking on invention. This will enable me to demonstrate the role of technology in his philosophy of invention. Technology refers not only to a set of material objects but also to a field of experience that stimulates the imagination in the production of possibilities.

[9] It should be noted that, in all his writings on technology, Simondon refers to "schemas," rather than "images," as in *Imagination and Invention*. The idea is that the "schema" is a dynamic image, an entity that transcends itself in a process of invention, as stated in relation to the image in the 1965-1966 course.

A return to Kant's schematism of the imagination

As we have seen, Immanuel Kant introduced the concept of "schematism" to address the difficulty of applying *pure* concepts of understanding to the sensible world. In order to resolve this issue, he identified a third faculty that bridges the gap between pure understanding and sensibility: *transcendental imagination*. This process is referred to as schematism. The imagination, through the production of schemas that translate categories into regulated, temporalized procedures, renders the categories of understanding compatible with phenomena in general. It is through time that the imagination's mediating function can reach the world of phenomena. In this sense, imagination functions less as a generator of images and more as a set of *a priori* rules that enable such production. This suggests that categories are not confined within the mind, but rather, they are open to the world through schematization. Transcendental schemas prepare us to welcome the objects of experience *a priori.*

All of this highlights the primary significance of schematism for Kant: above all, it is a *transcendental* issue. However, it should be noted that Kant distinguishes between three types of "concept," each of which requires a form of schematism to ensure the transition from the general to the particular. Alongside the *pure concepts of the understanding* (the twelve categories) are *pure sensuous concepts* (mathematical concepts) and *empirical concepts.* Thus, although schematism was initially conceived by Kant as a means of answering the question of how pure concepts of the understanding can be applied, it also applies to these other types of concepts. A new schematizing role is therefore found for imagination in the case of empirical concepts, such as the concept of "dog" that is used as an example by Kant. When I think of the concept of a dog, I have a particular mental image of a dog in my mind (for example, a Chihuahua). This transition from the general concept of a dog to a particular mental image corresponds to the schematizing activity of the imagination. In this case, schematism helps us to understand how we apply our empirical concepts to sensory data. Kant introduces the notion of "image" (*Bild*) in this context. The schema is the "representation of a general procedure of the imagination for providing a concept with its image[10]." Here we are on the fringes of Kantian thought, where the application of a concept to a given empirical case is not at all Kant's central objective, but rather a possibility left open by his philosophical system. The concept of "image" only appears negatively, as a counterpoint to his analysis, because he is specifically interested in concepts *that cannot be represented by images:* the pure categories of the understanding. However, let us imagine that we start with the general concept of a dog and try to form a mental image of one. The transition from the general concept to the particular image in our minds is the process of schematization, or giving a concept an image. Therefore, the schema is a process, or more precisely, a *construction operation*. We construct an image based on the rules of composition ordered by the concept—e.g., a four-legged animal with a snout, ears, and a particular way of moving—and these rules define the nature of the schema. While the case of the "dog" offers a compelling illustration of such a schematic construction[11],

[10] Kant, I., *Critique of Pure Reason*, Eng. trans. by P. Guyer and A. W. Wood, Cambridge, Cambridge University Press, 1998 *[Kritik der reinen Vernunft*, 1781], p.273.

[11] What would the set of temporalized rules (sequences of construction) would allow me to "construct" an image of a dog? What would the common schema be for a Great Dane, a Poodle, and a Basset hound? Empirical concepts present a complexity that cannot be expressed by the simple transition from the general to the particular because dogs of different species have extremely different ways of being "dog." The french philosopher Jocelyn Benoist examines this problem in his article "Appliquer ses concepts", in Kant, J.-M. Vaysse (ed.), Paris, Éditions du Cerf, 2008, pp.91–127.

Kant's example of a technical object is considerably more intriguing.

Indeed, while Kant provides few examples of the schematizing operation of the empirical imagination in the *Critique of Pure Reason* (discussing the examples of the dog and the plate), another text illustrates this concept using a technical object: *a clock.* Entitled "What real progress has metaphysics made in Germany since the time of Leibniz and Wolff?" and written in 1793, this text was published after Kant's death in 1804. In the text, Kant compares *schematism* and *symbolization.* Schematism refers to the operation that gives a *concept* its image. Symbolization, for Kant, characterizes the operation that gives an *idea* its image. To understand this difference, we must remember Kant's distinction between "concept" and "idea." A concept is a product of the *understanding (Verstand)* that applies to a sensory intuition. For example, there is a concept of "dog" or "plate" insofar as one can have a sensory experience of a dog or plate. An idea, on the other hand, is a product of the *reason (Vernunft)*, i.e., a concept that does not refer to any possible sensory intuition:

> If objective reality is accorded to the concept directly *(directe)* through the intuition that corresponds to it, i.e., if the concept is immediately presented, this act is called schematism; but if it cannot be presented immediately, but only in its consequences *(indirecte)*, it may be called the symbolization of the concept. The first occurs with concepts of the sensible, the second is an expedient for concepts of the super-sensible which are therefore not truly presented, and can be given in no possible experience, though they still necessarily appertain to a cognition, even if it were possible merely as a practical one[12].

In this passage, Kant aims to show that, although symbolization is legitimate, it lacks the value of objective knowledge, unlike schematism. Nevertheless, it is still possible to think of this operation of symbolization *by analogy* with schematism. To give an example of this difference, Kant compares the watchmaker as the cause of a simple clock—an operation that falls under schematism—and God as the cause of the products of nature—a judgment that falls solely under symbolization:

> The symbol of an Idea (or a concept of reason) is a representation of the object by analogy, i.e., by the same relationship to certain consequences as that which is attributed to the object in respect of its own consequences, even though the objects themselves are of entirely different kinds; for example, if I conceive of certain products of Nature, such as organized things, animals or plants, in a relation to their cause *like that of a clock to man, as its maker*, viz., in a relationship of causality as such, *qua* category, which is the same in both cases, albeit that the subject of this relation remains unknown to me in its inner nature, so that only the one can be presented, and the other not at all[13].

[12] Kant, I., *Theoretical Philosophy after 1781*, Eng. trans. by G. Hatfield, M. Friedman, H. Allison and P. Heath, Cambridge, Cambridge University Press, 2002, p.370.

[13] *Ibid*., emphasis added.

Kant argues that God, as the cause of nature's organized purposefulness, can only be conceived as an idea of reason. The image of the watchmaker only serves as a symbol for thinking analogically about the transcendent power of creation that God embodies. As a symbol, it provides an image of the supersensible concept without claiming to have any objective value as knowledge.

Why is this example, mentioned briefly by Kant, interesting in the context of schematism? By referring to the technical activity of the watchmaker, Kant considers schematism as *the construction of a material object* rather than the production of a mental image (as in the *Critique of Pure Reason*). Returning to the definition of the schema as the "general procedure of the imagination for providing a concept with its image," we can define the act of constructing the clock as transforming the clockmaker's conceptual knowledge, acquired through training and experience, into the material image of the constructed clock. In this sense, Kant invites us to think of the technical manufacture of a clock on the principle of schematism. Thus, we have *an empirical concept of a clock* held by the clockmaker, *the schematism of this concept* corresponding to the actual act of manufacturing the clock, and finally, *the particular image* of the clock corresponding to the clock constructed. At first glance, the material clock seems to be simply the product of the empirical actualization of the concept of a clock, giving primacy to the concept and considering the material object only as an "application" of the concept. However, the example chosen by Kant seems to go beyond his original intentions and subverts the mere idea of "application." The clockmaker's goal is to create a clock *that works*, i.e., a clock capable of measuring time with a certain degree of accuracy. In this sense, he does not construct it "any old way," but rather according to a methodical, a *regulated* process. Thus, we find the regulated procedure that characterizes the Kantian schema. This leads us to ask where the rules implemented by the watchmaker in his work come from. Orthodox Kantians who rely on the conceptual knowledge of the watchmaker forget what makes a technical object intrinsically normative. The set of materials used to construct the watch, how they are shaped, their forms, and how they interact with each other determine whether the object will function properly.

The question of schematism arises in Gilbert Simondon's work precisely here: the schema no longer derives from an internal cognitive activity, as it does in Kant, but from a dialogue with technical materiality. Although Simondon does not mention Kant, he extends this idea using the example of a clock while reversing its logic. This results in a new perspective on the schematism of the imagination in Simondon's philosophy of technology.

Gilbert Simondon's operational schematism

Simondon would agree with Kant's idea of making the schema a regulated operation. However, the fundamental point of divergence between Kantian and Simondonian schematism concerns *the origin of the applicable rule.* For Kant, the rule originates from the concept — one might even say the rule is the concept — because he considers only the moment when the watchmaker's technological knowledge *has been acquired* and only needs to be applied skillfully. Technique is thus conceived as stabilized knowledge in a subject and, in this sense, only needs to be applied. The rule then comes from the subject-watchmaker, or more precisely, from her or his understanding *(Verstand).* For Simondon, the watchmaker designs and manufactures the object by listening to the material form taking shape, with the clock's functioning

carrying its own normativity. Consequently, two clocks produced by the same clockmaker will not be identical, even if they embody the same technical functioning. The clockmaker adapts to the singularity of the materials and the functional resonance effects produced when the overall mechanism is set in motion. In this sense, technology is not primarily a set of acquired knowledge for Simondon, but rather an inventive practice. For Simondon, technical objects primarily exist in an *evolutionary manner.* A technical invention serves as a premise for new inventions, which serve as premises for further inventions. Therefore, it is up to technical objects to embody perpetual genesis: "The technical object is that which is not anterior to its coming-into-being, but is present at each stage of its coming-into-being; the technical object in its oneness is a unit of coming-into-being[14]."

Thus, evolution and transformation are essential characteristics of technologies, not contingent ones. The rules that enable the construction of new technical objects do not preexist; they must be invented from existing technical objects. In this sense, a clockmaker cannot simply prescribe the construction of a new, more efficient clock because he or she does not yet know the new rule that enables this innovation. New design and manufacturing rules for more efficient clocks can only emerge through observing how existing clocks work, especially the malfunctions that persist in these objects. Therefore, it is the technical object itself that *prescribes* possible lines of evolution through its functioning, especially its operating limits.

To understand this, we must distinguish between the two functional parts of a clock: the timekeeping mechanism, which uses a series of gears connected to the hands, and the driving mechanism, which provides the force, such as the weight of a pendulum. Rocker clocks, which were common during Kant's time, exhibited functional antagonism between these parts because the movement of the weight could interfere with the hands' movement to indicate time. Replacing the weight with a spiral spring reduced this antagonism:

> The improvement of clocks consisted in making the operation of the device constituting the time base as independent as possible from variations in the driving force (allowing weights to be replaced by springs), from the position relative to the vertical (replacement of the pendulum by the spiral spring balance wheel), and finally from variations in temperature and other causes of disturbance (compensating systems)[15].

Understanding these functional antagonisms and the normativity inherent in the object's functioning is what makes inventions possible. As we have seen, Kant always positioned himself from a place of acquired and established technological knowledge. For him, the rule comes from the understanding of the clockmaker, who merely *applies* this knowledge. However, he leaves the creation of this rule in the shadows, which can only come from the object's own normativity. Technological analysis of the clock reveals the emergence of new construction rules, as evidenced by the replacement of the pendulum with a spiral spring. This example is important because it shows that a new rule for constructing the object "clock" emerges *from a better understanding of how the clock works.* The clockmaker alone does not decide to invent a new clock. The invention first emerges from an observation of existing clocks as if they

[14] Simondon, G., *On the Mode of Existence of Technical Objects*, Eng. trans. by C. Malaspina and J. Rogove, Minneapolis, Univocal Publishing, 2017 [*Du mode d'existence des objets techniques,* Paris, Aubier, 1958], p.26.

[15] Simondon, G., *L'invention dans les techniques : cours et conférences,* J.-Y. Chateau (ed.), Paris, Éditions du Seuil, 2005, p.210, my translation.

were reinventing themselves through the clockmaker. In Gilbert Simondon's philosophy, this process is called the "process of concretization[16]."

The mode of practical knowledge at play in this invention process corresponds precisely to what Simondon calls "schematism." Throughout his work[17], he outlines an original schematism of the imagination that is inseparable from the question of invention. This schematism deploys a precise typology of the modes of existence of the schema as a mode of knowledge-action. Simondon has reflected on this concept since the beginning of his research on individuation. In a draft introduction to *Individuation in Light of Notions of Form and Information* dated 1955, he describes this project as "operative schematism":

> At the most basic level, crystallization and, at a higher level, the relationship between humans and objects in technical acts are similar processes linked by an analogy of patterns. It is by implementing the highest problematic relationship (reflexive thought), that we can understand the *operational schematism* of the simplest forms, which are the also the furthest removed from relationships in which human subjects can engage[18].

Understanding the individuation of a crystal or the invention of a technical object requires entering into the operational schematism of a structure coming-into-being. Therefore, the schema is not primarily a mental entity, but rather an operation that takes place *in and through things.* Thus, our natural and technical environment presents itself as a reservoir of schemas that can be invested in the creation of new effects. Unlike in Kantian schematism, where the rule of construction is provided from the outset by the watchmaker's understanding, this schematism focuses on creating new rules prescribed *by the objects themselves*. In this sense, schematism is not a power of the subject but rather a means by which the subject can observe and understand an operative schematism primarily located in things.

This explains why Simondon refers to the operating principle of a material structure as a "technical schema": the term primarily refers to the way an object functions. In *On the Mode of Existence of Technical Objects,* Simondon characterizes the specific mode of existence of technical objects based on their *functioning.* He repeatedly refers to this functioning as a "dynamic schema[19]." The schema is the *operation* that a technical structure materializes. For instance, the technical schema of a heat engine refers to the process of converting thermal energy into mechanical energy.

More precisely, the schema refers *not only to an objective operation* (the functioning of the object), but also to *the way in which the subject understands this operation.* Simondon uses the term "intuition" to describe this mode of knowledge, which is neither strictly intellectual nor strictly sensible:

[16] Simondon, G., *On the Mode of Existence of Technical Objects*, op. cit., p.20.

[17] The question of the imagination's schematic mode of operation is present in *On the Mode of Existence of Technical Objects* (1958), *Imagination and Invention* (1965–1966), and the article "Technical Mentality" (1961), as well as in three unpublished texts written while *On the Mode of Existence of Technical Objects* was being drafted: « De l'implication technologique dans les fondements d'une culture » ; « L'objet technique comme paradigme d'intelligibilité universelle » ; « L'ordre des objets techniques comme paradigme d'universalité axiologique dans la relation interhumaine » (Simondon, G., *Sur la philosophie* (1950-1980), Paris, Presses universitaires de France, 2016, p.341-453). The term "schematism" appears 22 times in these last three texts.

[18] Simondon, G., *Sur la philosophie* (1950-1980), op. cit., p.23, emphasis added, my translation.

[19] Simondon, G., *On the Mode of Existence of Technical Objects*, op. cit., p.34.

> […] knowledge by way of intuition is a grasping of being that is neither *a priori* nor *a posteriori*, but contemporaneous with the existence of the being it grasps, and which is at the same level as this being; […]. Intuition is neither sensible nor intellectual; it is the analogy between the coming-into-being of known being and the coming-into-being of the subject, the coincidence of two comings-into-being[20].

In this sense, knowledge of the schema is neither *a priori* nor *a posteriori,* but *a praesenti,* that is, simultaneous with the material operation itself, coupled with the dynamism of the thing being studied. The cognitive schema is constructed through exposure to the technical schema, meaning that observing a machine *in action* allows me to understand its operational behavior. Understanding how a machine works—such as a four-stroke engine—means mentally running the engine and replaying the four stages of intake, compression, combustion, and exhaust of the fuel mixture in the cylinder in one's imagination. Thought is shaped by this process, becoming an engine itself.

Therefore, a schema is an entity that is both *cognitive*—it is a product of thought—and *a characteristic of real technical exteriority.* However, unlike the Kantian perspective, the schema does not go from reason to phenomenon; rather, it follows the opposite path. For Simondon, to schematize is to embrace the dynamic image of an operation that first exists materially. Therefore, the schema can be seen as a product of thought that I can only construct by involving myself and 'merging' with the objective operations embodied by a thing. In this sense, the schema always resists me. It can only be constructed through frequent exposure to technical functions and operations. For example, it is by manipulating an engine, dismantling it and observing its operating diagrams that I begin to understand its dynamic schema.

Therefore, we can say that understanding a technical operation involves constructing its schema. The cognitive and technical schemas are two sides of the same participatory relationship with a technical object. Imagination refers to the relationship of attention to the schemas operating within things:

> The imagination is not simply the faculty of inventing or eliciting representations outside sensation; it is also the capacity of the prediction of qualities that are not practical in certain objects, that are neither directly sensorial nor entirely geometric, that relate neither to pure matter nor to pure form, but are at this intermediate level of schemas[21].

In this quote from *On the Mode of Existence of Technical Objects*, Simondon presents the concept of imagination as a way of accepting an operative reality. In other words, it is the capacity to perceive the regulated dynamic relationships that animate a structure's functioning. Thus, Simondon strips imagination of its status as an internal power of the subject, turning it into a practice disseminated throughout things. Imagination refers to a «particular sensitivity[22]» that takes shape from material structures or, rather, the operational «regimes» carried out by these structures. This knowledge of schemas is not purely conceptual; it is primarily the

[20] *Ibid.,* p.242.
[21] *Ibid.,* p.74.
[22] *Ibid.*

result of a sensitive relationship, a practice, and a cognitive and emotional interaction between the person who «conceives» and the material structures that inhabit them.

Three levels of expression of the schema: from material to formal

Simondon emphasizes the hybrid nature of the schema, which is found at the point where the material and the formal meet. But how can a schema be both *material* and *formal*? Simondon identifies three levels of technical schema expression, ranging from the most material to the most abstract[23]. To illustrate this, I will use a simple technical object, a valve, to highlight the different levels of expressiveness of a technical schema. A valve is a technical object that conducts a fluid in one direction[24]. From a Simondonian perspective, the valve schema can be described on three different levels.

If we focus on a particular valve, i.e., a technical structure determined by its material and history—for example, a ball check valve—we will be interested in its *singular schema*. This schema is characterized by its material singularity, and it is very close to the characteristics of the material and the specific relationships that are established in this particular valve. This schema merges with the structure of the object as it functions. In this case:

> The technical object is limited to itself, because instead of specific qualities, it has a function that lies in its schematism, in its structure; this function is the technical object in its individuality, grasped in its complete reality. Indeed, each technical object has its own particular characteristics of functioning, resulting from its adjustment, degree of wear and tear, and previous use; it is not exactly identical to another object manufactured in the same way and used by the same person[25].

The schema's effectiveness under given conditions is what makes it particular.

On the other hand, if we focus on what is common to the *technical lineage* of check valves, we abandon particular schemas (such as ball, flap and disc valves) and focus on their *lineal schema.* This schema begins to detach itself from the historical contingencies of a particular structure, in order to characterise what is specific to a technical lineage—in this case, mechanical valves. Rather than expressing the operation of a particular object, the lineal schema expresses the operation of an *operational community* centered on the articulation between different types of mechanical valves. This level is important for Simondon because it allows us to trace the evolution of such an operational community over time. By placing himself at this scale, he is able to define technical progress in terms of "concretization". The particular schema opens up potential for trans-structural inventions while remaining grounded in the materiality of the structures under consideration:

[23] In an article published in 2015, I discussed these different levels of expression of technical schemas. See Beaubois, V., 2015, "Un schématisme pratique de l'imagination", in Appareil, Issue No.16, https://doi.org/10.4000/appareil.2247 (last consultation : May 29, 2025). Allow me to revisit the example of "valves" that I presented in that text.

[24] *In On the Mode of Existence of Technical Objects,* Simondon uses the lineage of thermoelectric diodes to illustrate these levels of expression. A diode is an asymmetrical conductor of electrical current; a valve plays a similar role in the flow of fluids. We chose to discuss this example in mechanics rather than electronics to more easily explain the creative analogies it provides on different scales (notably architectural and human body scales).

[25] Simondon, G., *Sur la philosophie (1950-1980)*, op. cit., p.348, my translation.

> For a technique to develop, its schemas must be a constant demand for invention; but, for one invention to lead to another, it must first be realized, because it is only from a realization that a new demand for invention can arise[26].

Finally, Simondon defines a third level of schema expression that is different from the particular and lineal levels: "beyond this genus there is a *pure schema of functioning* that is transposable to other structures[27]."

The *pure schema* describes the formal dynamic principle of valve operation: ensuring asymmetrical flow. This schema allows a common operation to be characterized within and between technical lineages, forming a trans-lineal community that includes *mechanical valves* (e.g., check valves), *organic valves* (e.g., the heart, arteries, and veins that ensure asymmetrical blood flow), *electronic valves* (e.g., diodes that conduct electron flow in one direction), and *architectural valves* (e.g., locks that conduct fluid in one direction due to potential energy from the difference in height between basins). According to Kantian terminology, this "pure" schema is the *least technically pure* because it is no longer linked to a particular materiality; rather, it operates analog communication between these structures. The pure schema brings together seemingly disparate things (valves, locks, hearts, and diodes) that share a same type of operation. All of these things function *analogously*, embodying the same pure, dynamic schema of asymmetrical flow.

To clearly demonstrate the usefulness of the concept of 'pure schema', I invite you to consider a well-known experiment highlighted by modern philosophy: Descartes' experiment with a "piece of wax". Indeed, such a schematic transposition can shed new light on Descartes's famous example. In his Second Meditation, Descartes attempts to identify the human faculty capable of producing general knowledge of external things by starting with the piece of wax in front of him. The philosopher's answer is well known: if the senses have access only to the variable properties of wax and the imagination has limited power, then "only an inspection of the mind[28]" can provide access to wax's general essence as "something extended, flexible, and mutable[29]." In other words, understanding is said to be the sole source of knowledge "in general" as a power of subsumption by Descartes. However, the "generality" of the pure schema offers alternative interpretations of this experience. The flexible and mutable nature of wax, which can be molded when heated and hardens when cooled, is actually a feature of its operational schema that corresponds to the molecular properties of its matter. I can abstract from this particular morsel of wax a particular schema. I can then use this schema to consider the operational behavior of other pieces of wax. I can even use it to consider the operational behavior of other operations belonging to the same modality. Moreover, it is precisely because Descartes grasped the wax's schema through his direct experience with it and the relationship of participation he established with it ("it is hard, cold, plastic, and if you strike it, it will make some sound") that he was able to abstract it to the level of a pure schema and transpose it into

[26] *Ibid.*, p.445, my translation.

[27] Simondon, G., *On the Mode of Existence of Technical Objects, op. cit.,* p.45.

[28] Descartes, R., *Metaphysical Meditations,* Eng. trans. by G.B. Rawlings, London, Scott Library, 1901 [1640], p.137.

[29] *Ibid.*, p.136.

his *Rules for the Direction of the Mind* to qualify the modification of the sensing body in the test of sensation:

> One has, then, to conceive, first, that all the external senses, in so far as they are parts of the body, even if we do apply them to objects by means of an activity, namely, by means of local motion, still sense, strictly speaking, merely by means of passivity, in the same way in which wax receives an impression from a seal. Nor should one think that this is said merely by way of analogy: rather, one must conceive that the external shape of the sentient body is really changed by the object in exactly the same way as the shape of the surface of the wax is changed by the seal[30].

Here, we are not interested in the Cartesian thesis on sensation itself, but rather in the real analogical transfer Descartes uses to explain it. Descartes unwittingly gives rise to a *schematic* rather than *conceptual* understanding by constructing a *plasticity schema* that allows him to describe the deformation process under the effect of a force that persists even after it has disappeared. This schema is not a concept because it has a tangible aspect, which is always associated with specific structures that materialize its function.

Therefore, the essential characteristic of the schema is its *transposability*. This transposability allows Simondon's schematism of the imagination to serve as a basis for *inventive thinking*. Establishing operational analogies between different structures can lead to the invention of new structures by transposing schemas. For example, the analogy between the operating schemas of a check valve and a blood vessel could lead to the design of new types of mechanical valves through biomimicry. Thus, operational analogy is at the heart of imaginative capacity. It enables us to leap from one field to another in an attempt to transcend the limits of a particular structure to solve the problems posed by that structure itself. Hence, there is a fertility of the schema in producing new structures.

> The technical object does not have the immediate radiance of a symbol; materially speaking, it is limited to itself, but in its relationship with humans, it offers a fecundity that imbues its structure and schematism with a sense of exceeding the simple qualities of the materials from which it is made. Unlike an aesthetic object, the technical object does not exert its dynamism through radiance. Rather, it does so through its "provignement," which is associated with the human being who operates it[31].

Simondon uses a beautiful agricultural (more specifically, viticultural) image to illustrate this opening up of the technical object: "provignement" consists of laying a vine shoot from the parent vine and planting it in the ground until it takes root. Once the shoot has taken root, it can be separated from the parent vine. This process makes it possible to extend the life of a vine indefinitely. Analogously, the invention of a new structure prolongs the existence of a schema beyond its previous structures.

[30] Descartes, R., *Regulae ad Directionem Ingenii / Rules for the Direction of the Natural Intelligence,* Eng. trans. by G. Hefferman, Amsterdam-Atlanta, Rodopi, 1998 [1701], p.141.

[31] Simondon, G., *Sur la philosophie (1950-1980*), op. cit., p.347, my translation.

Gilbert Simondon's technical schematism can be described as "experiential" because it is based on direct experience of technical structures. It is worth noting that Simondon's work incorporates the Kantian framework, which defines schematism as 1) a constructive principle, 2) an intermediary between material and formal, and 3) a principle of understanding. In this sense, it is appropriate to speak of a "schematism of the imagination." In Kant, the schema is a method (a "how-to") or a regulated "operation" that gives consistency to an image. In Simondon, it plays an analogous role: the schema designates the operational unity of a structure and its mode of understanding and reinvention. Similarly, the schema is both *formal* and *material* because it is impossible to conceive of the "pure schema" of a structure separately from its expression in different particular schemas. Finally, for Simondon, schematizing is an activity of understanding, but it is not directed toward an act of *representation*; rather, it is directed toward an act of *invention*. The major difference between Simondonian and Kantian schematism is that the former is not an activity initiated or internal to the subject. Rather, it is a movement of opening up to and welcoming an operative meaning that first exists *in and through things.* Thus, imagination is no longer an "a hidden art in the depths of the human soul[32]," but rather something established through a relationship of participation with things and empathy with their principle of functioning. This explains why the domain of technical objects—the technological plane—is valuable to Simondon. It allows us to clearly demonstrate how the imagination works. Thus, technology has paradigmatic value for thinking about the imagination as a plane of participation and contamination by the dynamics of things in the world, whether technical or not. Therefore, Simondon emphasizes the "non-systemic" nature of technology, which is, above all, a place of indeterminacy and openness.

> […] there is no absolute coherence or convergence in the technical world, which is why it cannot close itself off. Neither causes nor ends are organized into systems. Technical reality is neither in the past nor in the future; it exists in the present, which is what makes it free. It is not dominated by a *vis a tergo* or a *vis ab ante*. It is not an effect, but an operation[33].

Technology allows us to grasp the fundamental openness of the inventive gesture. In this sense, technology acquires a status that Simondon would describe as "metaphysical," since it refers to the prototypical experience of openness to the new. Technology signifies not only a human endeavor of production but, above all, an inclination to transcend, to unveil novel possibilities. Technological experience is the gateway to what exceeds all present experience in the production of the new. Imagination is no longer the Kantian transcendental faculty that establishes the conditions of experience; rather, it designates the realm of openness to the possible. Technology becomes the *schema* that allows us to understand the operation of imagination. It offers itself as *the schema of the schema*, or the schema of imaginative schematism itself. It enables us to understand inventive imagination as an operative dialogue with schemas.

Conclusion

In a sense, Simondon revives the pre-critical notion of schematism as a *transition from one form to another* while expanding upon Kant's concept of the schema as a regulated pro-

[32] *Ibid.*, p.273, my translation.
[33] *Ibid.*, p.350, my translation.

cess that connects the formal and the material. The term "schematism" had a precise meaning in Kant's time, which is why it was chosen to describe the imagination's activity. In the theological register, the verb "to schematize oneself into" means "to take the sensible form of," as Roger Daval points out in his work on Kant's metaphysics[34]. "Schematism" referred to an operation of "metamorphosis" before Kant gave it a specific meaning. The idea of transitioning from one form to another is also found in the term "meta-schematism" in a letter Leibniz wrote to Arnauld on April 30, 1687: "The ancients were mistaken in introducing the transmigration of souls instead of the transformations of the same animal which always preserves the same soul; they put *metempsychoses pro metaschematismis* [change of souls in place of change of shape][35]."

In his concept of "schematism," Simondon retains the idea of a transformative process driving invention. However, he grounds this pre-critical notion in Kant's philosophy because imagination itself drives this movement based on our experience of things and their operational nature. Thus, Simondon inaugurates a form of inverted Kantian schematism. While Kant placed the general on the side of the subject's understanding and the particular on the side of images and objects, Simondon held the opposite view. He claimed that the generality of the schema came from its transposable nature, or that which circulates through structures. On the other hand, thought always takes the side of inventing particular structures.

This way of thinking about imagination in Simondon is also different from the new place Kant gives to the imagination in the *Critique of Judgment*, where he revalues knowledge of the particular as a driving force for thought. For Simondon, inventive capacity is not a matter of reflective judgment because it is not a judgment. Rather, it is an experiential relationship with things, participating in their schematic essence. This essence is as much knowledge as it is affect and action.

[34] Daval, R., *La Métaphysique de Kant,* Paris, Presses universitaires de France, 1951, p.6.

[35] Leibniz, G. W., *Philosophical Essays*, Eng. trans. by R. Ariew and D. Garber, Indianapolis, Hackett Publishing, 1989, p.88.

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